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ARE WE PHYSICALLY FIT?

UNITED STATES HANDICAPPED IN COMING PERIOD OF COMMERCIAL AND INDUSTRIAL COMPETITION.

RUPERT BLUE,

Surgeon General United States Public Health Service, Washington, D. C.

Only seventy per cent of American men fit for full military duty was the verdict of the draft. Surgeon General Blue emphasizes the need of public health education, child hygiene, industrial hygiene, rural sanitation, pure water, pure milk, sanitary sewage systems, better disease notification and campaigns. A comprehensive program! : :

WHETHER the league of nations fulfills expectations or not, there is no doubt at all that we are entering on a period of intense commercial and industrial competition in which more than ever before the outcome will be largely influenced by the people's physical fitness. As Lloyd George has so well indicated when he said, "You cannot maintain an A–1 empire with a C–3 population," we should study the lessons disclosed by the draft examinations, and at once take steps to correct the conditions responsible for the poor showing.

For that it was a poor showing, nobody can deny. Think of it! Out of over three million men examined—men whose age should have constituted them the very flower of this country's manhood—only 70 per cent were found to be fit for full military service!

With the results of the draft examinations before them, federal, state and local health authorities have a definite responsibility to do all in their power to improve the nation's physical fitness. Speaking for the United States public health service, I may say that we have prepared a program of coöperation with the state and local health authorities whereby we hope to meet the deficiencies disclosed by the draft examinations.

Before passing to a discussion of this program, let me point out that an analysis of the various causes for which the drafted men were rejected in the physical examination shows that many of the conditions discovered could have been prevented or corrected, especially if there had been proper health supervision in early life.

This is quite evident when one peruses the following rejections, classified by causes:

Causes.	*Per cent of all rejections*
Total rejections, for all causes	100.00
Alcohol and drugs	.43
Bones and joints	12.35
Developmental defects (height, weight, chest measurements, muscles)	8.37
Digestive system	.53
Ears	4.38
Eyes	10.65
Flatfoot (pathological)	3.87
Genito-urinary (venereal)	1.33
Genito-urinary (non-venereal)	1.35
Heart and blood vessels	13.07
Hernia	6.04
Mental deficiency	5.24
Nervous and mental disorders	5.07
Respiratory (tuberculosis)	8.67
Respiratory (non-tuberculosis)	1.67
Skin	2.68
Teeth	3.16
Thyroid	1.76
Tuberculosis of parts other than respiratory	.88
All other defects	3.06
Cause not given	5.44

A little consideration will show that any program of preventive and corrective measures designed to meet these defects must begin very early in life—in fact, even in the previous generation—for only in this way can any considerable reduction be effected in some of the conditions enumerated, *e.g.*, mental deficiency, nervous and mental disorders. A large measure of health supervision must be exercised in infancy and childhood, for it is at this period that proper preventive and corrective measures are most successful. That so large a proportion of the draftees were found with "developmental defects" indicates the need of greater attention to physical training and to the important subject of malnutrition.

But our health program should go much farther than this. The large proportion of those found to be tuberculous or suffering from defects of the heart and blood vessels, or from hernia, shows that health supervision should extend to conditions affecting adult life, especially those obtaining in industry.

It is to be understood that the program here outlined is to be carried out in the closest coöperation with the State and local health authorities. The assistance of unofficial agencies as auxiliaries to the duly constituted health authorities, is, of course, most welcome and should be utilized, provided it is clearly understood that the control of all public health activities rests with the official authorities, for they, and they alone, are responsible to the people.

With this introduction, let me present the program prepared by the public health service to meet after-the-war needs.

I. Because it is one of the chief responsibilities resting on the Public Health Service, first place in the program is given to public health education. I am convinced that this is the most important, the most fundamental and the most lastingly profitable of all the activities which public health authorities everywhere can undertake. The work in health education must begin in earliest childhood and can be carried on, in coöperation with the school authorities, throughout the entire school life. It must also embrace a large amount of well planned instruction, directed to the adult. This must be carried on through newspaper and magazine articles, through lectures, exhibits, pamphlets and posters. A special effort should be made to utilize the enormous public interest in moving pictures to carry health lessons to the people. But the educational program should not stop here. It should seek to promote a better appreciation of the value of good health work among our legislators and administrative authorities, to the end that the attainment of higher standards may be made possible by more adequate financial support for well planned health activities.

II. The next item of importance in our program is safeguarding the health of infants and children. This work should concern itself with the child from the prenatal period until the close of its school life. It should include the following:

The adoption of measures for the adequate care and instruction of expectant mothers.

Safeguarding the health of expectant mothers engaged in industry.

Accurate registration of all births.

Adequate care of babies in homes, welfare stations and day nurseries.

Instruction of mothers in baby hygiene.

Safeguarding of milk supplies and establishment of pasteurization plants.

Health supervision of children of preschool age.

Supervision of home and school environment of school children, including sanitation of school grounds and school buildings.

Medical inspection of school children, including provision for the correction and treatment of physical defects.

Mental examination of school children to determine and prescribe suitable treatment and training for children who fail in class work.

III. When one considers the frequency with which physical defects in later life are traceable to an earlier attack of some communicable disease, it will be clear that the prevention and control of such diseases should have a large share of attention. So far as the Public Health Service is concerned, its administrative control over these diseases is largely confined to maritime and interstate quarantine measures. In addition to this, however, our program provides for the promulgation, by the Public Health Service, of minimum standards for the control of communicable diseases. The establishment of such standards will greatly assist state and local health authorities in dealing with these diseases.

IV and V. The next two items are closely related—namely, the provision of pure water supplies and the safe disposal of excreta. The Public Health Service plans to extend its work of making sanitary surveys of existing water supplies and of aiding communities to obtain safe supplies. So far as the disposal of excreta is concerned, it is planned to continue the scientific studies which aim to devise simple and effective means of sewage disposal, and to establish minimum standards of permissible pollution of streams, lakes and rivers used for water supplies. Proper sewage disposal will control intestinal diseases, such as typhoid fever, dysentery, diarrhea and hookworm. In this country these diseases are responsible for an enormous amount of sickness and for at least 60,000 deaths annually.

VI. The Public Health Service would take an active part in improving this country's milk supplies by assisting in the general adoption of pasteurization, an adequate system of administrative supervision of the production and handling of milk supplies.

VII. An important part of the program of the Public Health Service is that relating to industrial hygiene. This provides for the continuation and extension of health surveys in industry with a view to determining precisely the nature of the health hazards and the measures needed to correct them. It also includes:

Securing adequate reports of the prevalence of disease among employes, and the sanitary conditions in industrial establishments and communities;

Establishment of minimum standards of industrial hygiene and the prevention of occupational diseases;

Improvement of the sanitation of industrial communities, the work being undertaken in coöperation with state and local health authorities.

VIII. Since over half of the population of this country lives in what are generally classed as rural communities, a large part of the program of the Public Health Service relates to rural sanitation. It embraces studies to determine improved methods of rural sanitation, and the widespread

dissemination of simple rules for rural sanitation through various governmental and civil agencies, such as the bureaus and divisions of the Department of Agriculture, the Farm Loan Board, agricultural colleges, public school boards, farmers' associations, women's clubs and the like.

The program also seeks to provide federal aid extension for the establishment and maintenance of adequate county health organizations in places in which the county and state governments, separately or together, will bear at least one-half (usually two-thirds) of the expense for reasonably intensive health work.

IX. Those who are familiar with malaria realize that few other diseases in this country have so disastrous an effect on physical efficiency. The program of the Public Health Service, therefore, seeks to aid by:

The further dissemination of knowledge of methods for controlling malaria;

The extension, through the country, of surveys of certain areas, as to the prevention of malaria and the malaria-carrying mosquitoes;

Continuing the demonstrations of methods employed by the public health service in various parts of the country whereby malaria has been effectively controlled;

Securing legislative action whereby extensive malaria operations can be carried out in coöperation with state and local health authorities on a fifty-fifty basis.

X. Inasmuch as it is impossible to direct health activities into the most effective channels without accurate and prompt information regarding the occurrence of disease, the Public Health Service seeks to improve its present service to health officers throughout the country by extending the system of maintaining collaborating epidemiologists in each state to assist in the prompt tabulation and forwarding of mortality reports.

In addition to this the Service proposes to aid the work in industrial hygiene by collecting special morbidity reports from industrial establishments throughout the country.

XI. Although they are included under communicable diseases, venereal diseases deserve and receive special mention in the program of the Public Health Service. The measures for the control of this important group of diseases are both medical and educational. They include:

MEDICAL.

Establishment of clinics, dispensaries and hospitals.
Epidemiologic studies.
Free diagnosis.
Examination for release as non-infective.
Free distribution of arsphenamine.
Control of carriers through detention and commitment.

EDUCATIONAL

Proper reporting of carriers.
Standardization of pamphlets, exhibits, placards and lectures.
Coöperation with national, state and local authorities and volunteer agencies.
Coöperative work in industrial plants, shipyards and railway employes' organizations.
Coöperation with druggists to prevent counter prescriptions and to control the use of patent nostrums for the treatment of venereal diseases.

XII. What has been said regarding venereal diseases applies also to tuberculosis. This disease is so important as a cause of disability that it deserves special consideration. The Public Health Service aims to secure:

Stringent provisions for the proper reporting of cases of tuberculosis.

Adequate instruction of families and patients, especially in families where there is a patient with advanced disease.

Hospitalization of cases wherever practicable, either through city institutions or by arrangements with state or district tuberculosis hospitals.

Coöperation with national societies and agencies having for their object the prevention of tuberculosis or the improvement of economic conditions.

Improvement of industrial conditions predisposing to tuberculosis, such as "dusty occupations."

XIII. Because of the interstate character of much of the work, railway sanitation is peculiarly a responsibility of the Public Health Service. In addition to measures for the health protection of the railway employes the program of the Public Health Service provides the following for the protection of the public health:

Sanitary supervision of water, milk and food supplies furnished by the railroads.

Sanitation of stations, terminals and rights of way with special reference to sewage disposal, malaria, mosquito eradication, and screening against disease-bearing insects.

Prevention of the spread of communicable diseases through common carriers.

XIV. Finally, inasmuch as the supervision of the public health and the administration of public health activities cannot be carried on without well trained health officers, and because the facilities for training such officers are still most inadequate, the program provides for the establishment of training schools in public health work in connection with stations of the public health service and with leading universities.

How much of this can be carried on will, of course, depend on the funds appropriated by Congress. That every dollar spent in preventive and corrective work of the kind here outlined constitutes a highly profitable investment has been well established. To neglect such important work at this critical period is to enter the coming commercial and industrial struggle with a distinct handicap.

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ANTI-MALARIA MEASURES IN VITI.

In its world-wide surveys of health conditions, the International Health Board has come upon many interesting and unusual problems. The illustration presents one of these, a fence of bamboo in the Feejee Islands. Residents in temperate climates may have difficulty in relating such a thing to malaria, but it is really a tropical phase of the tin can or gutter problem of colder climates. The bamboo has at frequent intervals in

its length a woody partition across its stem. Use is made of this in manufacturing the various liquid-carrying utensils of the tropical home, for it provides a solid bottom to the bucket or pitcher or dipper. When bamboos were cut for fences it was a favorite native decoration to leave the ring, which indicates the place of this partition, at a little distance below the top of the fence. Here was provided an admirable breeding place for the mosquito The International Health Board has been introducing a new style in fence building which will cut the bamboo just at the joint and leave no water cavity at the top. The picture is from the splendid stock of photographs in the Library of the Board.

HOW THE ARMY CONTROLLED DISEASE.

GEORGE A. SOPER, PH. D.,
Major, Sanitary Corps, U. S. A., Washington, D. C.

Eight defenses against disease in Army camps are outlined by Major Soper. The information is valuable for civil administration as well as military. The lines include draft examination, detention, instruction, camp construction, literature, coöperation between military and civil authorities, daily inspection, quarantine and the hospital.

AT the Atlantic City meeting of the American Medical Association, held in June, 1919, an exhibit of the work of the Medical Department was held in which the army's system of disease control was succinctly stated. The results, as well as the system itself, were explained in a specially prepared wall exhibit.

So many requests have been made for a copy of this statement that it is here given with a few modifications intended to suit it to the printed page. It is by no means a complete account of the campaign which was carried on in order to keep the men free from disease, and it purposely omits the efforts made against venereal infections, a subject which has been so thoroughly described as to need no repetition here.

There were three great principles involved: The Defensive, the Offensive and the Administrative. The object of the defensive was to keep disease from entering the camps; the purpose of the offensive was to discover infections which, in spite of all care, crept in; the intention of the administrative was to exercise such supervision over the whole subject as would insure a proper conduct of the campaign.

The army was fortunate in the possession of the mobilization camps, for these greatly simplified the question of disease control. No great advantage was gained by the use of barracks in place of tents, but the substitution of sewerage systems instead of the old latrines and the employment of wholesome and abundant water supplies for drinking and washing gave the soldiers at the outset of their career advantages for health which it is difficult to overestimate. At one stroke the danger of typhoid, diarrhea and other intestinal diseases was greatly reduced.

The care of the barracks, tents, mess halls and latrines were all standard procedures before America entered the war. This care was admirable where the underlying principles which were laid down by the Medical Department were properly employed. Dependence was placed upon cleanness, sunlight and order; no attempt was made to employ intricate or ultra-scientific methods to overcome conditions which might lead to disease.

With these general remarks we may go on to the particular procedures. The recruit was given a medical examination by his first draft board. If he was found to be suffering from an epidemic disease, his departure for camp was delayed until he recovered. This was the first line of defense for the protection of the camp. Its object was to keep disease as far away as possible.

Upon arrival at camp, the recruit was given a thorough medical examination.

For two weeks he was kept with other recruits in a place separate from the rest of the troops so that if he developed an infectious disease he might not infect others.

If he had an infectious disease, the recruit was sent to the hospital. He was given careful attention there in order that (a) he might get well as soon as possible and (b) not cause others to become sick. If the recruit did not develop an infectious disease, he was sent to join the main body of troops. This, the camp's second line of defense against infection, was designed to prevent disease from being brought in from outside.

As soon as he arrived in camp, the recruit was vaccinated against smallpox, typhoid and paratyphoid fevers. He might also be vaccinated against pneumonia. The recruit heard his first lectures on personal hygiene and learned how to get immediate attention if he was taken sick. This was the camp's third line of defense. Its main object was to increase the men's personal resistance to disease.

In the construction of camps steps were taken to prevent infectious diseases from (a) entering and (b) spreading. This was done by (1) selecting a suitable site; (2) locating the barracks and tents so that they would have enough suitable ground around them and good surface drainage; (3) providing pure and ample water supplies; (4) arranging suitable water closet and bathing facilities; (5) devising systems of sanitary sewage and garbage disposal. This was the camp's fourth line of defense. Its purpose was to prevent the spread of diseases through an improper disposal of wastes.

The procedures to be followed in the handling of infectious diseases were the subject of constant instruction. Medical officers were supposed to be familiar with approved methods for preventing the spread of infectious disease and were held responsible for their proper application.

Basic rules for dealing with infections are contained in the "Army Regulations" and "The Manual of the Medical Department." Orders and circulars of suggestions were issued from time to time by the Surgeon-General of the Army and by the commanding officers of the camps for the use of the organization surgeons. The camp surgeons provided lectures and demonstrations to the regimental medical officers each week. The men were given instruction in prophylaxis. This, the camp's fifth defense, was intended to convey a knowledge of how infections could be prevented.

Responsibility for the health of the troops devolved upon the line officers as well as the medical officers. It was impossible to maintain efficiency without effective coöperation by both arms of the service. Practically all action was taken on the advice, and not by the order of medical officers. Medical officers may command only their own troops. This was the sixth line of defense. Its purpose was to state what should be done and who should do it.

Sanitary supervision was exercised over all the soldier's activities. This had to do with such subjects as cleaning and ventilation, the preventing of overcrowding, the management of post exchanges and places of popular resort in the cantonment zone.

By coöperation with the civil health authorities in the territory surrounding the camp, information was supplied to the camp surgeon concerning the prevalence of infectious diseases in that territory. In this way knowledge was obtained of any dangers to which the soldiers might be exposed when they left camp for a few hours.

When troops were sent from one camp to another, information was sent with

them concerning the infectious diseases to which they had been exposed. This was the seventh line of defense. Its purpose was to make certain that the correct precautions were taken.

To control infectious diseases they must first be discovered. They should be discovered as soon as possible. This was provided for by the old institution of sick call and the new plan of inspection.

Sick call is a call at the doctor's office. If the soldier feels sick, he is taken by a sergeant to see the regimental doctor, or if stricken seriously ill, the doctor calls upon him. The man is sent to hospital, or to the regimental infirmary or to his quarters, depending upon the nature and the severity of the attack.

Inspection consists in lining the men up and so examining them. In a suspected case the man is questioned and his temperature taken. When there is reason to suspect an infectious disease exists, the man is ordered to fall out and report at the infirmary for further examination. The whole company may be compelled to strip in order that the inspection may be more thorough. This was the eighth line of defense. Its intention was to detect cases of impending epidemic disease at the earliest possible moment.

When a soldier was taken sick with an epidemic disease his comrades were quarantined in their quarters until it was known whether any others were infected also. In many instances only time could determine this point. The quarantine was continued until all who were infected were discovered.

The cause of the outbreak was investigated. The patient was interrogated and all possible connections with previous cases were inquired into. Where carriers were found they were quarantined in a part of the camp especially set aside for that purpose. This was the ninth line of defense and was intended to confine the spread of disease to those first exposed.

Each organization had an infirmary where mild cases of non-infectious disease could be treated and where surgical cases of minor importance might be attended to. The infirmary also afforded an opportunity for observing men who might be coming down with infectious diseases and should be separated from their fellows for the safety of the camp. This was the tenth line of defense. The purpose was to cure slight illnesses and protect the camp against unrecognized cases.

The hospital was the battleground on which to deal with recognized cases of epidemic disease. The hospitals were divided into many wards where the different diseases could be dealt with separately.

In connection with the hospitals there were isolation camps where men who had been in contact with cases of infectious disease were sent for observation. It was only after the patient had been cured and entirely freed from the possibility of transmitting disease that he was discharged from the hospital and sent back to his organization. This was the eleventh line of defense; in some instances it was the greatest. Its object was to afford a suitable place where disease, having been driven from every other spot, could be properly nursed and treated.

The regimental companies kept records of all new cases of sickness, including the name, diagnosis and disposition of the cases. The company reports were consolidated into a daily regimental report. The infirmaries and hospitals recorded their admissions for each cause and the number of patients discharged. Copies of all these reports were submitted each day to the camp surgeon, and reporting directly to him were a

sanitary inspector, a sanitary engineer and an epidemiologist, each exercising appropriate supervisory duties.

Each week the camp surgeon sent a telegraphic report of the infectious diseases to the Surgeon General at Washington. In the event of an exceptional outbreak a special telegram was at once forwarded stating the details. Monthly sanitary reports, special sanitary reports, and reports of camp epidemiologists gave further details to the Surgeon General.

Every week a table of current disease statistics, relating to all the camps, was prepared and distributed by the Surgeon General. At the end of the year a comprehensive printed report with the tables of data based on the most complete data obtainable was issued by the Surgeon General. This was the twelfth and last line of defense. It was the means by which the presence of disease was officially recorded and measured.

Laboratories situated at each camp played an important part in detecting and suppressing disease. By their means food handlers were examined for the carrier state; meningitis carriers were looked for; water and milk were analyzed, and a large amount of other work done to assist in defending the soldiers against disease.

From the Surgeon General's Office, officers of high rank made systematic inspections of the camps and the findings of these inspectors were reported to the Surgeon General and to the commanding officers of the troops.

In the Surgeon General's Office at Washington a section, consisting of a number of officers and men, kept careful watch of all reports, tabulated all statistics, assimilated all data and recommended such action for the control of the infectious diseases as the latest discoveries in preventive medicine indicated.

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HOUSE-BOAT LABORATORY, "THE JOSEPHINE."

This adjunct to the equipment of the California State Board of Health has proved to be of greatest value in performing various functions which a floating institution of the kind can perform. The JOURNAL is indebted to the California Board for the use of the illustration.

THE SCOPE OF A FEDERAL DEPARTMENT OF HEALTH.

PETER H. BRYCE, M. D.,
Chief Medical Officer, Canada Immigration Service, Ottawa, Ont.

Read before the Canadian Medical Association, Ontario, Ont., June, 1919.

What an up-to-date Federal Health Department should undertake to do, is set down by Dr. Bryce in eight direct statements. Among the functions are; to direct legislation, collect information, educate the public, stimulate baby hygiene, establish nursing systems, look after immigrant inspection, and equip health research laboratories.

IT IS difficult to deal adequately with such a subject without giving a historical sketch illustrating the evolution of public health through the progress of scientific medicine; but it is evident that any government adopting legislation for the establishment of such a department, based upon such progress, must have clear ideas as to the end or object it wishes to effect.

To-day there can be no doubt but that the direct effect upon what we call the man-power of the country is the motive influencing action with a view to the saving the lives of the citizens who are the source of power whether for national defence or economic progress. Such ideas naturally involve the investigation of questions lying at the basis of public health legislation, such as the number of persons who die in the first year of life, the percentage of feeble-minded in any community or the different diseases which a given group of school children may be affected with. Such problems appeal to the modern legislator because they are not only of national importance but invite public interest and demand political action.

Such causes have been especially operative during the war and take their place amongst the modern questions affecting national prosperity equally with conscription, submarines, aeroplanes and dreadnaughts, since upon the health and hygiene of the army depends the effective use of all other destructive agencies. Naturally, to the student of public health, it is these broad problems which are of primary interest, since they include all such newer questions as child hygiene, housing, school inspection, hygiene of industries, physical education and all the details of the prenatal care of mothers, infant welfare stations, physical examination of school children, occupational hygiene, etc., and the "old health work," such as the control of contagious diseases, water supplies, sewerage systems, etc.

Naturally it will be found that our communities throughout Canada, as elsewhere, vary greatly in the stage of their evolution in health matters, some being as backward, shown by their death rates, as most countries were fifty years ago; while others have seen the evolution within the last twenty years of a public health consciousness, which has ensured methods for meeting the various social health problems, as great as that in any country, whether in Europe or America.

Realizing then in some measure the nature and extent of the objects to be attained, we shall outline some of the functions which a Federal Department of Health may fairly be expected to perform:

First. It can aid in crystallizing the most advanced health ideas into legislation, common to all the Provinces, and

provide means by which facts of vital and statistical interest can be tabulated frequently and published for general use.

Second. It can arrange for the collection of information regarding threatened epidemic and other diseases, which can be disseminated for the use and guidance of the executive officers of the several Provinces and of neighboring states and thus cultivate reciprocity in action for the general health welfare.

Third. It can coöperate in measures intended to deal with health conditions growing out of our complex life tending to disseminate diseases of a peculiarly social character. Indeed, experience shows that such measures must be yet more refined and comprehensive demanding the education of a too often unwilling public involving as they do ethical principles accepted only gradually.

Perhaps first in importance of these are the measures for dealing with tuberculosis. It is just twenty years ago since the Ontario Sanatorium Act was passed and experience since then, as well as its general adoption in other countries, has shown that local sanatoria supply the most practical means, both curative and preventive, for dealing with this disease, satisfying as they do the feelings of relatives of the sick while carrying educative influences even into the poorest home. Such centers have led to the evolution of the district sanitary visitor and health nurses and when associated with an active anti-tuberculosis society exercise a most potent influence on both health officials and charitable associations through forcing slum conditions and over crowding into the field of active municipal politics. There are annually in Canada probably one-half as many deaths from tuberculosis as there were of influenza last year; but the poverty induced through long sickness, the loss of wages and the dangers of infection to the family, probably exceed annually the cost of the influenza epidemic which has occurred but one in thirty years.

In dealing then with this disease it seems most proper that the Federal Department of Health should assist not only through education, literature, and illustrated lectures, but also directly by establishing sanatoria for Indians, by erecting several climate sanatoria where the influence of altitude, sunshine and temperature on various types of the disease can be studied, by assuming the cost of patients going from a sanatorium in one Province to one in another and by aiding through a per capita per diem grant patients in the curable stages of the disease in the several Provincial sanatoria.

Fourth. It can stimulate everywhere social and educative agencies to appoint trained nurses, just as school teachers are employed. As the visiting health nurse has become a municipal necessity in tuberculosis work, so she will become more and more the medium for dealing effectively with those social diseases spoken of as venereal, since only gradually will it become possible to reach their silent victims; but wherever clinics have been established in the general hospitals now so widely existing, the district nurse, through encountering their effects in mothers and children, will prove active instruments in inducing patients to receive and follow treatment. In this urgent work it is apparent that federal regulations, controlling the movements of persons under treatment must be passed, while a fair share of the cost of treatment may well be borne by the federal government, which has the authority to call upon the man-power of the country to come to its defence and whose value depends upon its physical efficiency.

Fifth. It can assist in the welfare of mothers and the care of their children

by such various ways as are being adopted in England. Not till the Boer War did England fully realize what physical defects meant in the loss of man-power and since then and increasingly since 1914 her health program has undertaken to deal adequately with the potential soldier and producer of wealth through elaborate plans for child welfare. This has been extended there to the point of ensuring through legislation medical assistance and home helps for the prospective mother, while in this work the general government assists the municipalities to the amount of 50 per cent of the local cost. If in this and in venereal disease work some definite proportion of the cost based upon local efficiency were borne by the federal department in Canada, results proportionate to those in England would doubtless be obtained.

This work in England is intimately related to the aid granted to such mothers under the Insurance Act of 1912 and the Maternity and Child Welfare Act of 1918, which provides for medical help, advice of health visitors, maternity or child welfare centers and food and milk both for mother and child.

Sixth. It can institute some comprehensive scheme whereby the best results of medical science can be brought to the poorest individual. The facts just given indicate the direction in which systematic child saving work will proceed in Canada; while the amounts of money spent ($811,774.32 in 1917 in Ontario) on the 172,000 members of the Friendly Societies in Ontario, make it plain that many persons in Canada are already educated in the idea of organized mutual help; but the fact that the medical services paid amounted to only $90,621 by all these societies shows that there was either little real sickness or that the insured persons went elsewhere for treatment on the ground that the quality of the services so poorly paid for would be about in proportion to their cost.

In nothing, perhaps, would compulsory health insurance lead so directly to beneficial results as in the early care of syphilitic cases and especially of infected prospective mothers. When it is recalled that at least 50 per cent of the children of syphilitic mothers die, the great advances made in recent years in the treatment of the disease by salvarsan products may be appreciated through the reports of several London clinics, as that of the London Lock Hospital which reports that in eight months 68 pregnant women were given treatment for venereal diseases and that of these 42 were delivered, and of the syphilitics most gave after delivery a negative reaction while 37 out of 45 children were born alive.

Seventh. It can greatly extend the scientific methods of dealing with the admission to Canada at seaports of diseased or defective immigrants. This implies the existence of a fully qualified staff of all-time medical officers to carry on inspection during the immigration season, and who at other times would be employed in studying social problems and making surveys in those districts especially to which immigrants have gone.

Eighth. It can establish and equip laboratories to assist both in the work of the several services already indicated and by investigating new problems in the more technical work of the department. It is interesting to know that the laboratories of the Inland Revenue are to be transferred and will naturally devote their attention especially to food problems as they relate to nutritive values and their bearing upon child hygiene. Such could also be made of much value in establishing standards of foods in relation to their digestibility and food values in proportion to their market price. It seems apparent that maternity homes

and child welfare centers must soon become the places where will be taught and whence will radiate more practical knowledge and direct benefits to health than through any other agency. There will begin the preventive and corrective work which in recent years has been carried on in the public schools, often after regrettable delay and permanent injuries to the children have resulted, due to defects readily curable in the pre-school age.

I have attempted very imperfectly to outline some of the functions of a Federal Department of Health established in this reconstruction period after the war. When we recall that it is not much more than fifty years since the first facts were known about the agents of decomposition through fermentation and putrefaction and less than that since the germ theory of disease was either known or accepted, we may well be gratified in seeing preventive and curative agencies in medicine for dealing with disease being daily brought more closely together.

I have referred especially to the advanced work of British authorities since they accurately indicate the sentiments which will, I am sure, animate the administration of such a department of health in Canada. It is just fifty years since the first report urging the establishment of a board of health was adopted by the Canadian Medical Association and here, as in England, it has required a great war to arouse the people to a sense of the primary national need, the saving of man-power. It seems most appropriate that in peace as in war the "mental patterns" which activate all national action should travel *aequo pede* through every state within the Empire over which the flag waves, and what can be more appropriate than that we should wish to see in one of the quarterings of our coat-of-arms Aesculapius, with his ever-wise attendants, sitting meditating sublime wisdom. We hail the presence of all the daughters of the Grove with its health-giving ever-flowing springs, Healing (Janiscus), Help (Alexenor), Prayer (Aratus), Well-begotten (Hygieia), Mode of Healing (Jaso), with Panacea the all-healing herb.

To-day we dream of medicine as never-ceasing in its efforts to trace back the aberrancies of germ-plasm to its ancestral determinants and to be satisfied with nothing less than that such will again incline towards the normal. Already we know of much that can be done in the pre-natal stage to minimize potential evil; while during infancy and the pre-school age yet more can be accomplished. And so up through "the seven ages of man" the work of the goddess Panacea will operate. Indeed, when true science shall have controlled the springs of being and when the real purpose of life in its ethical aspects is understood and dominates the activities of men, we shall have a right to view man's life as an adventurous voyage along a pathway, undulating enough to prevent monotony, gently winding rather than tortuous or labyrinthine, bordered with sweet flowers banked with sturdy forest trees, and having a descent withal so gentle and gradual that it will scarcely be perceived. Then as evening comes on and the pathway passes under the over-arching boughs we shall behold its æuthanasia—the final act of a world drama, the sublime summation of a single human personality whose complex is the whole human race.

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SO-CALLED NONRESIDENT DEATHS

A PRELIMINARY NOTE ON AN EXPERIMENTAL STUDY OF THIS SUBJECT IN NEW YORK STATE.

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"What constitutes a nonresident death?" is a very vexing statistical question. Much propaganda and commercial announcement depend on how the term is interpreted. Dr. Eichel gives some formulated rules, and presents some illustrative tables. : : : : : :

THE subject of so-called "nonresident deaths"* has occupied the attention at some time or other of nearly every one responsible for official vital statistics. In some districts† it has caused agitation among the laity, which has even resulted in popular demands for "reform" of vital statistics. It is impracticable in this note to review various efforts which have been made both here and abroad to establish procedures for the determination of crude death rates which would exclude the deaths of persons who were not "residents" of the areas for which the rates were computed, and which would include the deaths of those persons who did have their residence therein but died elsewhere. In the United States there is no standard official method and those of individual registrars vary widely.

In New York state from time to time it has been advisable to modify, for practical administrative purposes, the mortality data of certain districts as prepared and published in formal reports by standard methods. It has been desirable, therefore, to study the problem as it affects this state to determine the nature and number of these so-called nonresident deaths, the relative importance of their causes, the districts in which they occur, and when and to what extent. In other words, granting that observation shows that enough people die away from their usual homes to considerably affect the death rates of certain districts, what would analysis show to be the nature and relative importance of various factors involved, and could a practical procedure be devised for correcting the condition?

The problem may be studied from what appear to be two different standpoints, viz.:

I. To determine for certain areas the deaths of only those persons who had their fixed and usual residence therein. Residence in this instance may be determined by some arbitrary time limit, such as one year, or the test of legal or voting residence, or by the statement on the death certificate as to usual place of abode. Such methods may have the advantage of relating the deaths to Census enumerations, or estimates, of population, but the disadvantage of not comprehending necessarily any relationship between the fatal illness and the district of its origin.

II. To determine the deaths in certain areas due only to causes having their origin (*i. e.*, with regard to time of beginning) within such areas. This would seem to have the advantage of making the crude death rates more correctly reflect local sanitary conditions.

* This term is used throughout this paper upon the assumption that certain deaths can be thus designated in accordance with a prescribed definition of "residence" from a sanitary viewpoint.

† The word "district," as used throughout this paper, means a primary registration district for vital statistics, which in the United States usually corresponds to a city, village, or township.

Relating the deaths to the enumerated (or estimated) midyear population used as a base for determining the crude death rate doubtless increases the accuracy of the rate as an expression of the proportion of deaths from all causes to each 1,000 of the population, but does it necessarily increase the accuracy of the rate as a guide to the relative vitality of such a group of individuals?* For the latter purpose the second standpoint would perhaps be more desirable, namely, to assess to each district so far as possible the deaths from causes which had their origin therein. This might involve disregarding the nonresident population, but this cannot always be definitely ascertained or estimated, nor uniformly transferred between districts even if it is ascertainable. In many instances it would not be sufficient to materially affect the population base; and, finally, such a deduction and transference of nonresident populations could not be made uniformly for all the areas (in New York state) for which the crude rates are to be corrected. But crude death rates are often subject to other fallacies which impair their comparability, of which intercommunity travel and migration is only one. Concerning the latter Dr. Newsholme† says:

"The only way to avoid the fallacies arising from migration would be to have records kept of the movements of population, and the births and deaths of each place subjected to analysis before comparison is made. In order that the death rates of two populations should be comparable on equal terms, so far as migration is concerned, it would be necessary that (a) the number of immigrants and the average duration of their residence should balance the number of emigrants and the average duration of their absence; and that (b) the proportion of persons of each sex living at each age, their state of health and liability to disease, should be the same among both."

Migration, especially that of intercommunity character, probably does not usually detract seriously from the practical reliability of the population bases used for the determination of crude death rates nor from the comparability of the latter; and certainly, as we have seen, it is not the only disturbing element present. In addition it must be noted that only in Census years have we an approximately correct enumeration, and that for intervening years estimates are used, which are admittedly less reliable than enumerations. The great majority of individuals enumerated or estimated as having their fixed residence in a certain district doubtless have maintained their usual residence therein for more than a few months or a year, and hence do essentially comprise the typical or average population of such district. For practical purposes its death rates probably do really indicate the relative vitality of such an aggregate of individuals, and probably also furnish a measure of the occurrence of mortality due to all causes combined having their origin within such a group of people,—including those causes which at present are regarded as influenced largely by environmental factors. It would seem more important therefore to transfer to each district the deaths from causes which presumably originated therein, rather than only those of individuals who had their usual residence therein. It is possible that the result would be practically the same from both standpoints,—it is one of the purposes of this experiment to ascertain to what extent this may be true in New York State.

Essential, of course, to any experimental procedure for identifying and allocating nonresident deaths is not only a

* For example, many inhabitants of a city may die of typhoid fever acquired in a nearby summer resort district but their deaths being charged to the city incorrectly indicate the prevalence of the disease in the city, whereas the resort district might be apparently free from it and its mortality indicate no serious insanitary conditions. Yet these deaths would not be transferable merely as nonresidents, because the individuals may never at any time have resided outside of that city.

† Elements of *Vital Statistics*, p. 88.

definition of residence for this purpose, but other equally important conditions, viz.,

1. Knowledge not only of the total number of deaths which occur in the area for which the correction is to be made, but also of the deaths of all, or practically all, persons having their usual residence therein but who die elsewhere.

2. Information as to each decedent's usual place of abode and length of residence in the district where death occurred.

3. Information as to the duration (by years, months, and days) of the cause, or each of the causes, of death.

4. Complete data, so far as possible, as required by all the items on the usual standard certificates of death.

5. Deduction and transference of the nonresident populations, if ascertainable and in addition if in any instances they are large enough to affect the practical value of the denominators used, and especially if such aggregates of individuals exist in the given area as practically separate social groups from the rest of the population (for example, state hospitals for the insane).

It is immediately apparent that the securing of all these conditions involves difficulties and possibilities of fallacy, and that the detailed data cannot always be secured in mathematically exact form. There are few, if any, registration offices which have complete records of all citizens having their usual residence within the district of jurisdiction but who die elsewhere; and many (especially cities) which have none at all. Thus clearly it is impossible for many registrars to effect a complete reciprocal deduction and transference of all recorded resident and nonresident deaths, and for this reason the "resident rates" published by many registrars are grossly misleading. Again, if the primary data on the death certificate are incomplete as to the place in which the fatal illness was contracted, duration of the illness, duration of residence at place of death, etc., gross errors may occur. These latter deficiencies of data are to some extent amenable to administrative control. Residence, however, with regard to the origin of the fatal disease, or the district to which the individual's death should be assessed, from this viewpoint, is an obscure question. Various definitions and applications of it are possible. As with other problems involving the complex factors of modern social conditions, solutions are not usually possible by simple "rule of thumb" methods.

Many definitions used, if not the majority, have one or both of two characteristics, viz.: (1) The arbitrary determination of residence by a time limit (usually one year); or by no time limit, and instead, the acceptance of the statement on the certificate of "usual place of residence"; (2) an applicability limited chiefly or entirely to deaths occurring in hospitals or other institutions.

Limitations would seem to be involved in the use of such definitions, resulting in fallacies as great as those it is desired to overcome; *e. g.*, there is no time limit that can be arbitrarily applied to all deaths to determine the decedents' residence or the place of origin of the fatal illness, and the duration of fatal morbid conditions varies widely; for the same reason the deaths cannot be arbitrarily charged to the usual place of residence without regard to the duration of residence in the place of death as compared with the duration of the fatal illness; the "usual place of abode" is really only the temporary residence of many people* (Americans are noted for the ease and frequency with which great num-

* It would seem therefore unessential to charge all deaths to the usual place of abode as the procedure would not necessarily relate the deaths to the census enumerations of population and certainly not to the postcensal estimates (in themselves only approximations to the average population).

bers of them change their residences from one district to another). A definition applicable only to institutions may omit from consideration the deaths which occur in health resorts not classifiable as institutions, (*e. g.*, mountain resorts for the tuberculous), and those which may occur in places not known by name as institutions (*e. g.*, private homes for nervous diseases, the insane, maternity cases, etc.).

Theoretically, then, the definition should make possible the allocation of any death to the registration district in which the decedent acquired the fatal illness. It may be argued that this cannot be exactly accomplished in the present state of medical knowledge and under present conditions of medical certification of death; and that if it could, no relationship would be proved between many causes and the districts concerned,—indeed that no relationship could exist and that the deaths would be purely accidental as to time and place of origin. But, on the other hand, as has been noted, any or all crude death rates, for these same reasons may be subject to many fallacies; that perfect accuracy is not in any event statistically achievable; and therefore the methods devised must be such as will most effectively reduce or eliminate error. The ideal method would be to study each individual death to ascertain the district to which it should be assessed, but administrative and other reasons make this impossible on a large scale. The alternative is to formulate a definition (with rules for its application) which will make possible the identification of all persons who die away from their usual district of residence, and also those who may have acquired their fatal illness elsewhere. But even such a definition will present difficulties and limitations in its applications, as will presently appear, owing to the vagueness and elusive character of the factors involved in the causation of many diseases.

With regard to place of origin, all causes of death may be divided roughly into two classes,* viz.: (1) constitutional or intrinsic, and (2) environmental or extrinsic. This classification is especially useful for sanitary purposes, and these chiefly we have in mind in studying nonresident deaths. It is those diseases which result from or are influenced largely by environmental factors which are most amenable to sanitary control, and often also it is these which are reflected in high rates and toward which public health measures are directed. It is true that these latter causes may not include the majority of all deaths which occur prematurely (*i. e.*, before "old age"), or which may be classed as preventable, but they probably do include nearly all those which may be attributed definitely to the district of origin,—types of these are the ordinary communicable diseases, and accidental causes of death. In the other group of diseases (intrinsic) are those of obscure or indeterminate origin with regard to the specific cause or the time of beginning, *e. g.*, typical of this class are cancer, arteriosclerosis, appendicitis, etc.

Many other speculations suggest themselves as to the time of beginning or place of origin of a fatal illness. For example, tuberculosis is believed to be acquired in early childhood; should the deaths of adult patients be charged to the childhood residence, place of death, or place of usual abode? A mortality rate indicates the proportion of a certain average number of people in a given area which dies in a given period of time, or the relative vitality of such a group of persons differentiated by sex, age, race, occupation, or otherwise. It is usually also assumed that the specific causes of death have their

* Sedgwick, *Principles of Social Science and the Public Health*, pp. 10–11.

origin in the given area or among its people, except those of individuals who are "nonresidents." But in any average American community many, if not a majority, of the people are not continuously subject to the environmental influences of the district of residence alone but come into contact with the environments of other districts, if only during an occasional day "in the country," or "in the city." A few hours' sojourn out of a district is sufficient to acquire typhoid fever resulting in death in two weeks, or syphilis resulting in death twenty years later—and yet the individual may actually have resided continuously in one district throughout his lifetime,—the latter having been indisputably his "usual abode" —possibly he has resided continuously in the same house in which he was born. However, in the absence of any more precise test of the vitality of a community, its annual crude or general death rate may be accepted, subject to qualifications, as a practical measure for sanitary purposes. The fallacies to which it is subject are probably not usually so great or numerous as to detract from this practical value.

It is manifest that not only are crude death rates subject to various fallacies, as by the inclusion or exclusion of deaths which from certain viewpoints are not properly attributable to the districts of death, but that any method for the correction of such fallacies must in itself be incomplete and subject to errors, owing to the very nature of the circumstances and the character of the complex factors involved. The presence of large institutions in certain districts is a well known factor disturbing the reliability and comparability of the rates of such districts. In New York state this was partly adjusted on July 1, 1917, by a law establishing state institutions as separate registration districts. But this was only a partial solution because these "institutional districts" then became a sort of statistical "limbo" or anomaly, there being no standard recognized method for transferring such deaths to the former residence of the inmate decedents; it does not include private institutions and health resort districts, nor individuals who die away from their usual abodes, nor does it affect New York City, which contains over half the deaths of the entire state and two large state institutions besides. The New York state enumeration of population in 1915 had already excluded the inmates of state institutions from the districts in which the institutions were located.

Subsequently, in 1917, when the experimental study of the "nonresident problem" was planned, it was arranged to obtain transcripts monthly during the calendar year 1918 of all deaths occurring in New York City (which is independent of state supervision in registration) for which the usual residence was given as elsewhere.* This made available the records of all deaths occurring in the state away from the decedents' usual places of abode. Those which occurred outside of the state and whose usual residence was within it remained, of course, unknown. It could be assumed that the latter were not sufficient in number to be of importance. A preliminary study had indicated that probably less than 1 per cent of the deaths occurring annually within the state are of persons whose usual residence is outside of the state. This number is probably balanced by the deaths outside of the state of persons having their usual residence within it. It is very probable that the number is smaller in the latter instance, as the state has large border cities with many hospitals, and famous health resorts, which receive pa-

* This was made possible by the cordial coöperation of Dr. William H. Guilfoy, registrar of records for New York City.

tients from all of the eastern United States. In addition, New York state had available for this purpose practically all the essential information obtainable by the routine methods of registration.—records of nearly all the deaths of persons having their usual residence within the state, practically complete essential data on all death returns, and almost perfect registration of deaths. An experimental study of the "nonresident problem" therefore seemed justifiable within the limitations herein outlined.

A tentative definition of nonresident deaths was drafted and its utility for the allocation of deaths carefully studied. It was found necessary to modify this considerably to make it inclusive of all deaths presumably due to causes not originating in the districts of death, and also to formulate rules for its uniform application. The sixth and final draft of the definition was as follows:

GENERAL DEFINITION.*

A nonresident death is that of a person who dies away from his usual place of abode within one year if the duration of the disease (stated or inferred) was as great or greater than the length of residence in the district where death occurred.

APPLICATIONS AND EXCEPTIONS.

1. *Chronic Diseases.*—In the case of a death from tuberculosis or any nervous disorder, although the length of residence exceeds one year, if the duration of the disease is longer the death shall be considered as nonresident; and if the duration is not given, all deaths from chronic causes shall be considered nonresident if they occur within six months after arrival at place of death.

2. *Infectious Diseases.*—Deaths from infectious diseases, particularly typhoid, tuberculosis, and less common diseases when in epidemic form, shall be charged to the place where the disease was contracted, if definitely known as being elsewhere than the place where death occurred.

3. *External Causes.*—A death due to violence or accidental cause shall be charged to the usual place of abode if known, unless it definitely resulted from a hazard peculiar to the place of occurrence. Deaths caused by drowning, conflagration, street car, automobile, or railroad accidents, or industrial accidents in the course of employment, are the type which shall be charged to the place of occurrence. Homicidal deaths shall be charged to the place of occurrence and suicidal to the place of usual abode.

4. *Deaths in State Institutions (Correctional, Educational, and Medical).*—These shall be charged to the place of residence at the time of admission, unless some other district is stated or may be inferred to have been the district of origin of the fatal illness.

The following additional rules were developed for application of the definition:

RULES.

(1) Deaths from external causes shall be charged to one of the following places, to be preferred in the order stated:

(a) District of occurrence; if unknown then to
(b) District of death; if unknown then to
(c) District where body was found.

(2) Deaths of inmates of custodial institutions (for the feeble-minded, juvenile delinquents, etc.) shall be treated the same as those occurring in prisons and insane asylums (see application 4 above). Deaths of inmates of orphan asylums and homes for the aged shall be treated as deaths of residents unless transferable under the general definition and its exceptions.

(3) Deaths of new born infants and young children shall be charged to the district of death and not to the district of usual residence of the mothers.*

(4) If the data upon which judgment must be based, such as residence or duration of disease, are missing or inconsistent, then charge to district of death; but if other data make possible an inference with reasonable certainty as to the district of residence when the cause of death originated, then the death should be charged to that district.

(5) Deaths occurring in a city, for which the

* In its application the definition became practically the same as this: "A nonresident death is that of a person from a disease or cause the duration of which (stated or inferred) is as great or greater than the length of residence in the district where death occurred."

The 1 year provision was retained to make possible the differential study mentioned on p. 655, *i. e.*, classification on the basis of residence as determined by an arbitrary time limit, and also on the basis of district of origin of the fatal illness.

* All births are charged to the district of occurrence, hence transference of infant deaths without transference of their births would be useless or misleading; also the infantile mortality could not be properly corrected unless both births and deaths were deducted and transferred. This procedure could not be handled administratively and was therefore postponed for future study.

ESTIMATED POPULATION AND ACTUAL NUMBER OF DEATHS, WITH DEATH RATES,* FOR CERTAIN AREAS AND CITIES IN NEW YORK STATE FOR EACH OF THE FIRST SIX MONTHS OF 1918 SHOWING CERTAIN RESULTS OF DEDUCTION AND ALLOCATION OF SO-CALLED NON-RESIDENT DEATHS.

District	Estimated Population 1918	Actual Number of Deaths	Non-Residents Deducted	Non-Residents Added	Net Increase	Net Decrease	Total Resident Deaths	Actual Death Rate	Resident Death Rate	Net Increase	Net Decrease
New York City	5,872,143										
January		7,960	46	129	83		8,043	16.0	16.2	.2	
February		6,889	27	119	92		6,981	15.3	15.5	.2	
March		9,114	34	136	102		9,216	18.3	18.5	.2	
April		7,810	24	155	131		7,941	16.2	16.5	.3	
May		6,101	26	146	120		6,221	12.3	12.5	.2	
June		5,235	34	124	90		5,325	10.9	11.1	.2	
Rest of State	4,809,515										
January		6,543	647	564		83	6,460	16.0	15.8		.2
February		6,055	514	422		92	5,963	16.4	16.1		.2
March		6,900	647	545		102	6,798	16.9	16.7		.2
April		6,934	588	457		131	6,803	17.6	17.3		.3
May		5,979	560	440		120	5,859	14.7	14.4		.3
June		5,273	464	374		90	5,183	13.4	13.1		.3
Cities (Exc. N. Y. C.)	2,362,586										
January		3,317	222	237	15		3,332	16.6	16.7	.1	
February		3,039	172	196	24		3,063	16.7	16.9	.2	
March		3,511	251	245		6	3,505	17.5	17.5		
April		3,604	219	189		30	3,574	18.6	18.5		.1
May		2,999	243	178		65	2,934	15.0	14.7		.3
June		2,608	184	155		29	2,579	13.5	13.3		.2
Rural	2,446,929										
January		2,908	120	327	207		3,115	14.0	15.0	1.0	
February		2,719	94	226	132		2,851	14.4	15.1	.7	
March		3,070	105	300	195		3,265	14.8	15.7	.9	
April		2,999	101	268	167		3,166	15.0	15.8	.8	
May		2,686	75	262	187		2,873	13.0	13.9	.9	
June		2,406	89	219	130		2,536	12.0	12.6	.6	
Institutions (State)											
January		318	305			305	13				
February		297	248			248	49				
March		319	291			291	28				
April		331	268			268	63				
May		294	242			242	52				
June		259	191			191	68				
I—Cities (over 175,000)	740,487										
January		1,003	56	58	2		1,005	16.0	16.0		
February		922	35	13			935	16.2	16.4	.2	
March		1,035	58	53		5	1,030	16.5	16.4		.1
April		1,081	44	43		1	1,080	17.8	17.8		
May		902	43	29		14	888	14.4	14.2		.2
June		780	29	22		7	733	12.9	12.7		.2
II—Cities (50,000–175,000)	659,231										
January		992	80	62		18	974	17.8	17.4		.4
February		894	50	59	9		903	17.6	17.8	.2	
March		1,042	84	67		17	1,025	18.7	18.3		.4
April		1,095	89	50		39	1,056	20.3	19.5		.8
May		874	79	53		26	848	15.6	15.2		.4
June		752	51	48		3	749	13.9	13.9		
IIIA—Cities (20,000–50,000)	505,216										
January		678	38	39	1		679	15.8	15.9	.1	
February		632	39	42	3		635	16.3	16.3		
March		737	48	44		4	733	17.2	17.1		.1
April		740	37	38	1		741	17.9	17.9		
May		618	61	31		30	588	14.4	13.7		.7
June		567	58	36		22	545	13.7	13.2		.5
IIIB—Cities (10,000–20,000)	374,194										
January		537	37	60	23		560	16.9	17.7	.8	
February		487	32	35	3		490	16.9	17.	.1	
March		560	45	60	15		575	17.7	18.1	.4	
April		571	41	41			571	18.6	18.6		
May		466	45	50	5		471	14.7	14.9	.2	
June		413	37	37			413	13.5	13.5		
IIIC—Cities (Under 10,000)	83,458										
January		107	11	18	7		114	15.1	16.1	1.0	
February		104	16	12		4	100	16.2	15.6		.6
March		137	16	21	5		142	19.4	20.1	.7	
April		117	8	17	9		126	17.1	18.4	1.3	
May		139	15	15			139	19.7	19.7		
June		96	9	12	3		99	14.0	14.5	.5	

* Rates per 1,000 population.

ESTIMATED POPULATION AND ACTUAL NUMBER OF DEATHS WITH DEATH RATES,* ETC.—*Continued.*

District	Estimated Population 1918	Actual Number of Deaths	Non-Residents Deducted	Non-Residents Added	Net Increase	Net Decrease	Total Resident Deaths	Actual Death Rate	Resident Death Rate	Net Increase	Net Decrease
Buffalo	471,979										
January		667	36	26		10	657	16.7	16.4		.3
February		604	22	27	5		609	16.6	16.8	.2	
March		683	36	27		9	674	17.1	16.9		.2
April		714	28	14		14	700	18.5	18.1		.4
May		616	24	10		14	602	15.4	15.0		.4
June		539	19	10		9	530	13.9	13.7		.2
Rochester	268,508										
January		336	20	32	12		348	14.8	15.3	.5	
February		318	13	21	8		326	15.4	15.8	.4	
March		352	22	26	4		356	15.5	15.6	.1	
April		367	16	29	13		380	16.7	17.3	.6	
May		286	19	19			286	12.6	12.6		
June		241	10	12	2		243	11.0	11.0		
Albany	112,551										
January		190	16	6		10	180	19.9	18.9		1.
February		165	18	7		11	154	19.1	17.8		1.3
March		204	30	16		14	190	21.4	19.9		1.5
April		196	21	10		11	185	21.2	20.1		1.1
May		158	23	7		16	142	16.6	14.2		2.4
June		145	14	6		8	137	15.7	14.9		.8
Binghamton	56,667										
January		79	12	3		9	70	16.5	14.6		1.9
February		78	2	3	1		79	17.9	18.1	.2	
March		96	12	7		5	91	20.0	18.9		1.1
April		73	7	9	2		75	15.7	16.1	.4	
May		85	2	3	1		86	17.7	17.9	.2	
June		72	3	9	6		78	15.5	16.8	1.3	
Schenectady	84,539										
January		107	7	6		1	106	14.9	14.8		.1
February		91	1	8	7		98	14.0	15.1	1.1	
March		118		5	5		123	16.5	17.2	.7	
April		113	7	2		5	108	16.3	15.6		.7
May		96	9	3		6	90	13.4	12.6		.6
June		82	7	3		4	78	11.8	11.3		.5
Syracuse	149,616										
January		209	17	17			209	16.5	16.5		
February		213	9	16	7		220	18.5	19.1	.6	
March		239	12	13	1		240	18.8	18.9	.1	
April		303	20	13		7	296	24.7	24.1		.6
May		199	15	11		4	195	15.7	15.4		.3
June		174	7	15	8		182	14.2	14.8	.6	
Troy	74,679										
January		158	21	6		15	143	24.7	22.4		2.3
February		131	13	5		8	123	22.8	21.4		1.4
March		142	22	9		13	129	22.2	20.2		2.
April		160	25	4		21	139	25.9	22.5		3.4
May		119	18	7		11	108	18.6	16.9		1.7
June		103	9	5		4	99	16.6	16.0		.6
Utica	84,015										
January		134	6	13	7		141	18.8	19.8	1.	
February		110	5	14	9		119	17.0	18.4	1.4	
March		128	6	8	2		130	18.0	18.3	.3	
April		154	9	8		1	153	22.4	22.2		.2
May		129	12	11		1	128	18.1	18.0		.1
June		97	9	4		5	92	14.1	13.4		.7
Yonkers	97,164										
January		115	1	11	10		125	14.0	15.3	1.3	
February		106	2	6	4		110	14.2	14.7	.5	
March		115	2	9	7		122	14.0	14.8	.8	
April		96		4	4		100	12.1	12.6	.5	
May		88		11	11		99	10.7	12.0	1.3	
June		79	2	6	4		83	9.9	10.4	.5	

*Rates per 1,000 population.

NOTE TO THE TABLES. In these three tables the population estimates are based upon the changes shown between the United States Census of 1910 and the State enumeration of 1915, except New York City, which is based upon the United States Census of 1900 and 1910. The title "State Institutions" does not include all the State institutions but only those outside of New York City in which deaths occur. The State institutional deaths which could not be allocated remain charged to the institutions in the column under "Total Resident Deaths." Fifteen per cent of these deaths could not be transferred to a former or usual residence. The numbers of deaths in the tables are the provisional totals published in the New York State Department of Health Official Bulletin and are subject to correction for final publication; but the factor of error involved, due chiefly to delayed returns, is negligible for the present purpose.

ESTIMATED POPULATION AND ACTUAL NUMBER OF DEATHS, WITH DEATH RATES,* FOR CERTAIN AREAS AND CITIES IN NEW YORK STATE FOR THE FIRST HALF YEAR OF 1918 SHOWING CERTAIN RESULTS OF DEDUCTION AND ALLOCATION OF SO-CALLED NONRESIDENT DEATHS.

District	Estimated Population 1918	Actual Number of Deaths	Non-Residents Deducted	Non-Residents Added	Net Increase	Net Decrease	Total Resident Deaths	Actual Death Rate	Resident Death Rate	Net Increase	Net Decrease
New York City	5,872,143	43,100	191	809	618		43,727	14.7	14.9	.2	
Rest of State	4,809,515	37,684	3,420	2,802		618	37,066	15.7	15.4		.3
Cities (Exc. N. Y. C.)	2,392,586	19,078	1,291	1,200		91	18,987	16.2	16.1		.1
Rural	2,446,929	15,788	584	1,602	1,018		17,806	13.7	14.6	1.9	
Institutions (State)		1,818	1,545			1,545	273				
I—Cities (over 175,000)	740,487	5,723	265	253		12	5,711	15.5	15.4		.1
II—Cities (50,000–175,000)	659,231	5,649	433	339		94	5,555	17.1	16.9		.2
IIIA—Cities (20,000–50,000)	505,216	3,972	281	230		51	3,921	15.7	15.5	.3	.2
IIIB—Cities (10,000–20,000)	374,194	3,034	237	283	46		3,080	16.2	16.5	.5	
IIIC—Cities (under 10,000)	83,458	700	75	95	20		720	16.8	17.3		
Buffalo	471,979	3,823	165	114		51	3,772	16.2	16.0		.2
Rochester	268,508	1,900	100	139	39		1,939	14.2	14.4	.2	
Albany	112,551	1,058	122	52		70	988	18.8	17.6		1.2
Binghamton	56,667	483	38	34		4	479	17.0	16.9		.1
Schenectady	84,539	607	31	27		4	603	14.4	14.3		.1
Syracuse	149,616	1,337	80	85	5		1,342	17.9	17.9	.0	
Troy	74,679	813	108	36		72	741	21.8	19.8		2.0
Utica	84,015	752	47	58	11		763	17.9	18.2	.3	
Yonkers	97,164	599	7	47	40		639	12.3	13.2	.9	

* Rates per 1,000 population.

former or usual residence given is a suburban district of that city, but the duration of residence in the city is given as "lifetime," shall be charged to the district of usual residence, unless there is evidence on the certificate indicating or warranting the inference that the cause of death originated in the city.*

(6) When two or more causes of death are given jointly, the International List of Joint Causes shall be used as a guide to preference of cause for allocation of the death.

(7) If the district in which the cause of death originated is stated, the death shall be charged to such district unless this statement is inconsistent with other data on the certificate, then the procedure in rule (4) above shall be followed.

Space does not permit of a detailed consideration of the reasons for the adoption of each item of the definition or of its applications, but many will be readily evident if considered in the light of all the foregoing considerations. Appearing at first to be cumbersome and complicated the definition and rules were found to be readily applicable, and selection and decision on various groups of death certificates concerned was made rapidly and uniformly.

A few preliminary results of the study were shown in the provisional monthly tabulations published in the *New York State Health Department Official Bulletin* for the first six months of the year 1918, and are shown in the table printed below. It is hoped to prepare a final report and tabulations to show the results of deduction and transference for the entire calendar year 1918 and by months, between the following areas: New York City and the state exclusive of it; total urban and total rural areas; the total institutional districts, individual cities, and the total urban and rural areas of each county. This is as detailed as it is practicable to show the results, especially for the short period of 1 year as the numbers involved in villages and towns would be insignificantly small.

* Many persons residing in the suburbs of a large city such as New York, or within commuting distance of it, regard themselves as citizens of such city, especially if they were born therein, are employed there, or have resided therein during various periods of their lives.

This striking poster, issued by the Surgeon General of the Army, shows the high type of illustration now set before the demobilized soldiers.

THE BACTERIOLOGICAL DILUTION SCALE AND THE DILUTION AS A BACTERIOLOGICAL UNIT.

WILLIAM FIRTH WELLS,
Captain Sanitary Corps, U. S. A.

Practical pollution-meter provided. Why not express results directly in terms of bacteriological findings? Simplest of scales has mathematical as well as technical advantages. A long step towards solving some of the annoying troubles of bacteriological computation.

THE bacteriological measuring scale fundamentally differs from most instruments of measure. A single application determines whether bacteria are contained in sample quantities ranging from one liter, in the case of excellent drinking water, to a millionth of a cubic centimeter, in the case of crude sewage. Such an immense range is difficult to conceive. What instrument of linear measure can determine distances ranging from a yard to the circumference of the earth, or what balance can compare weights ranging from a kilogram to a millionth of a gram? Little attention has been given to the nature of this scale, which is the most important consideration in quantitative bacteriology.

Yet practical bacteriologists have evolved a remarkable technical scale of dilutions admirably adapted to the problem. By inoculating a series of culture tubes with successive dilutions of the sample, it is possible in a limited number of proportional steps to span the whole range of bacterial content. The intelligent application of this scale eliminates errors compared to which the secondary qualitative disagreements become negligible* and gives an instrument for measuring grades of pollution far more sensitive than is demanded by the indefinite standards of interpretation.

Although instinctively interpreting their results in accordance with the technical procedure, bacteriologists have been reluctant to express them mathematically in terms of the scale. Houston has gone so far as to assign grades or classes such as A, B, C, D, etc., to waters accordingly as B. coli are generally present or absent in 10 cc.; 1cc.; .1 cc.; .01 cc., etc. This is a direct attempt to make the dilution the bacteriological unit of measure, and the bacteriological dilution scale logically follows based upon the dilution unit.

More closely studied such a scale proves to have interesting mathematical relations. Instead of adding successive units, each degree is obtained by multiplying the former one by ten. The steps are, therefore, in geometrical progression and the scale is a geometrical scale. Since the multiplier is the base of common logarithms, the scale of dilutions corresponds to the number of bacteria, indicated by that dilution, as does the logarithmic scale relate to the scale of numbers. For the practical laboratory man it is sufficient to derive a few simple rules of manipulation which follow from the relationship of the dilution scale to a geometrical scale.

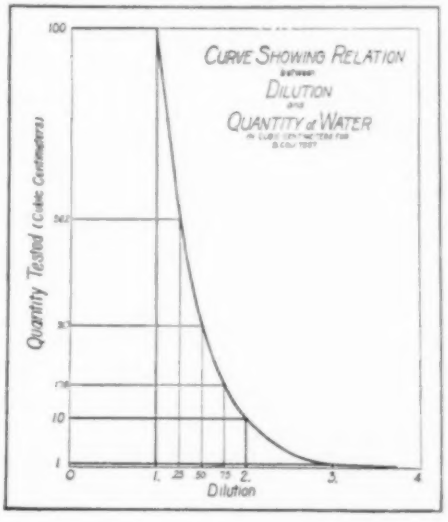
* The Practicability of Adopting Standards of Quality for Water Supplies. Robert B. Morse and Abel Wolman, pp. 198–228, Jour. Am. W. W. Assn., Vol. 5, No. 3, September 1918.

It is essential, first, to have the "dilution" clearly defined. To bacteriologists it signifies the quantity obtained by diluting one cubic centimeter of sample with nine cubic centimeters of sterile water, and then removing one cubic centimeter for test. The first "dilution" thus signifies .1 cc. of sample; the second "dilution" .01 cc., of sample; the third "dilution" .001 cc., etc. If it be possible to conceive the term applied to an extension of the scale in the reverse direction, 1 cc. quantity would be considered to have a "dilution" of 0; 10 cc. a "dilution" of −1; 100 cc. a "dilution" of −2; etc. In any case the "dilution" unit would be the degree between two quantities, of which one is ten times as great as the other. A succession of these units would constitute a "dilution scale," arbitrarily designated for simplicity or convenience.

For purposes of water analysis, in testing for B. coli, where the greatest application of the dilution method occurs, the liter is chosen as a unit quantity for several practical reasons. The liter, therefore, would have a "dilution" of zero, which represents the best conditions tested in a drinking water. One hundred cubic centimeters would be considered the first "dilution" of the liter; ten cubic centimeters the second "dilution"; one cubic centimeter the third, and so forth. The relation between the "dilution scale" and the quantity scale is as follows: (Table I.)

An attempt has been made in Chart I to plot this relation, but so rapidly does the quantity change with the "dilution" that it is impossible to plot more than three "dilutions" directly. In order to plot more "dilutions" it is necessary to

CHART I.



plot the "quantities" on a logarithmic scale as is done on Chart No. II. There will then be ten whole "dilutions" between the limits of excellence in a drinking water and the maximum number of B. coli in crude sewage, which gives ten classes or grades of pollution.

The subdivision of these classes and the interpretation of intermediate or fractional "dilutions" is the next question to arise. The same principle applies as for whole "dilutions," that is, they are the corresponding points on the geometrical scale. Thus twice diluting by the "half" "dilution" gives the "whole" "dilution." The factor is, therefore,

TABLE I.

RELATION BETWEEN QUANTITY AND "DILUTION" SCALES.

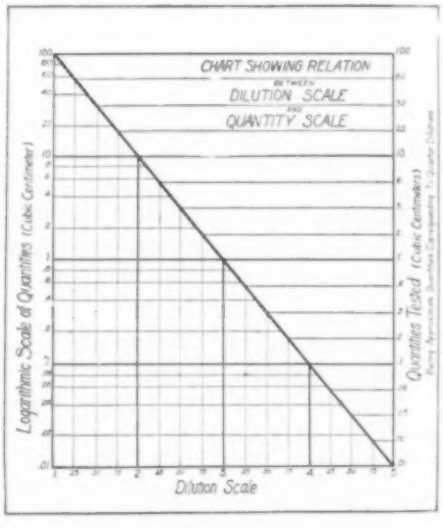
Cubic Centimeters.

Quantity	1000	100	10	1	.1	.01	.001	.0001	.00001	.000001
"Dilution"	0	1	2	3	4	5	6	7	8	9

approximately 3.17, because 1 : 3.17 x 1 : 3.17 = 1 : 10. Likewise the "quarter" "dilution," 1.78, diluted a second time gives 3.17, the "half" "dilution"; a third time gives 5.62, the "three quarters" "dilution"; and a fourth time gives 10, the "whole" "dilution." This is illustrated in Chart No. I, where the "dilution" between 100 cc. and 10 cc. has been divided into four parts and the corresponding quantities derived. Since the first significant figure only is needed in bacteriological work the following table gives a simple summary of the "dilution scale" divided as far as quarter "dilutions." They are also graphically represented on Chart No. II. In a like manner the quantity corresponding to any "dilution" can be obtained directly from logarithmic tables.

The simplicity of the "dilution scale" as a mathematical register of the technical steps of procedure in bacteriological analysis leads to similar simplicity in arithmetical computations. The record of an individual test is merely the statement of the highest positive "dilution," of course after reverting, where necessary, higher "dilutions" which may be positive when lower ones happen by chance to be negative. This "dilution" will be called the "dilution positive" to distinguish it from other positive "dilutions." In summarizing several tests the "dilutions positive" are added up and averaged. The result may be called the "average dilution positive." The procedure is extremely simple and gives a result which can be interpreted directly in terms of the "dilution scale." (The mathematical characteristics of the "average dilution positive" and the other simple methods of obtaining it, together with simple methods of converting it into the "geometrical mean" number of bacteria represented are given in other papers.*)

CHART II.



There are two general purposes in the test for B. coli in water. First, water is tested directly to tell whether it is suitable for drinking purposes. The United States Treasury standard passes a water

* The Geometrical Mean as a B. coli Index, Science N. S. Vol. XLVII, No. 1202, pp. 46-48, Jan. 11, 1918.

TABLE II.

TABLE FOR CONVERTING "DILUTIONS" INTO QUANTITIES.

CUBIC CENTIMETERS.

"Dilution"	.00	.25	.50	.75
0	1000.	600.	300.	200.
1	100.	60.	30.	20.
2	10.	6.	3.	2.
3	1.	.6	.3	.2
4	.1	.06	.03	.02 etc.

which does not yield B. coli in more than two of ten fermentation tubes inoculated with ten cc. of water. This corresponds to an "average dilution positive" of 1.2 on the "dilution scale." How much better or worse a water is than this standard is given by its computed position on the scale.

The second purpose of the test is to determine the grade of pollution, in order to test the efficiency of treatment, or in sanitary surveys and investigations to discover the nature and history of pollution in waters. It is interesting to note that in the journal which contained a paper above mentioned, one of the authors proposes an index of filter plant efficiency based on the same principle.* The ratios of the logarithms of the bacterial counts are considered a truer index of filter plant performance than the ratios of the counts themselves, because of the geometric nature of bacterial results. This is nothing more than the ratio of the "average dilutions positive" if the bacterial count had been determined and expressed by "dilutions." The latter would be a much simpler method of obtaining the result and is suggested for obtaining the index of efficiency of B. coli removal.

Another application of this same principle was made by Prof. Earle B. Phelps in an effort to make averages of milk counts more rational. He suggested averaging the logarithms of the counts and finding the geometric mean in this way. It was found by experience that straight arithmetical averages gave a wrong impression of true conditions. As before, had the number of bacteria been determined by the "dilution" method, the "average dilution positive" would have been a fair statement of conditions on the "dilution scale" or be converted directly into the "geometrical mean."

Lastly I wish to mention two of the principal characteristics of bacterial life which suggest the reason for the nature of the "dilution scale." First the rate of growth is a geometrical progression which means that the relation between time and "dilution positive" is constant. If the "dilution" content of a medium changes one "dilution" in a given time, it will change another "dilution" in the same time. Also the death-rate or the rate of disinfection follows the same law in the reverse direction. The length of time it takes the "dilution" content to drop one "dilution" would be a good constant of disinfection. Similarly in the natural purification of streams the disappearance rate of bacteria can be very conveniently expressed in terms of "dilutions." In the data obtained under the supervision of Surgeon H. S. Cumming in the investigation of the Potomac River, Capt. H. P. Letton and the author computed the rate of decrease of B. coli under natural conditions and found it to follow very closely the "dilution" law.

The computations were never published, but are plotted on Chart I, opposite page 128, Hygienic Laboratory Bulletin 104. The striking similarity to the curve shown on Chart I above is an instance of the close confirmation of theory by practice.

* A Preliminary Analysis of the Degree and Nature of Bacterial Removal in Filtration Plants, Abel Wolman, pp. 272–278, Vol. 5, No. 3, Proc. 38th Year of Jour. of Am. Water Works Assn., September, 1918.

Remember—New Orleans—October 27–30, 1919.

WHY IS POOR VENTILATION HARMFUL?

A DISCUSSION OF THE FUNDAMENTAL PSYCHOLOGIC BASES FOR CURRENT VIEWS.

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Ventilation is a much discussed matter in which doctors and engineers are by no means all agreed. Mr. Reed presents a comprehensive, up-to-date consideration that is enlightening. He says that the last word has not been said yet. Note his careful bibliography.

I. INTRODUCTION.

FOR some years past there has been a gradual development of the idea that the harmful effects of bad ventilation are closely correlated with high temperature and high humidity. This view has been widely accepted, especially in the light of many observations of a general nature. There have been many practical developments by heating and ventilating engineers based on this view and it is generally agreed that the sum total of the results observed have been confirmatory.

However, in the development of the more practical points investigators and those interested in the commercial and industrial development and application of artificial ventilation schemes have apparently lost sight, for the time, of the fundamental physiological facts which constitute the real support for the idea. For this reason, then, an attempt is herein made to collect, in part, the basic physiologic evidence and present it in such a way that those interested may understand more fully why the factors of increased temperature and moisture of the surrounding atmosphere are harmful to the human body.

Investigators in this field have too frequently dealt with more extreme and crucial conditions and overlooked some of the less apparent but equally important facts of slightly accelerated or slightly inhibited physiological reactions which have a direct bearing on the general condition of the organism, but yet can hardly be considered pathological. It is in this field that the industrial hygienist may find his greatest interest.

II. HISTORICAL.

Many and diverse were the notions of early investigators along this line. Most of these may be passed over. However, the observations of Mayow (1) are of importance because they so closely parallel the fallacy of the early physiologists of the modern period, as well as the notion still present among the laity, *i. e.*, that the noxious effects of air in occupied rooms are due to expired substances. This pioneer investigator ascribed the death of animals in confined chambers to their consumption of "nitro-aërial spirit" in the air and to the giving off of "noxious vapors."

Although later researches definitely established the fact that the "nitro-aërial spirit" was oxygen and the "noxious vapors" carbon dioxide, the old idea persisted among physiologists until, in 1851, Gavarret (2) found that when oxygen was supplied and carbon dioxide was removed so as to keep up the normal constitution of the air in a chamber in which animals were confined, the animals still died. Hammond (3) obtained similar results a few years later.

An explanation of this occurrence was offered by Brown-Sequard and D'Arsonval (4) when they claimed to have shown that the harmful effects depended on the presence of a toxic, volatile, organic substance, the result of respiratory processes, to which the name "anthropotoxin" was assigned. This hypothesis persisted among certain groups until quite recently.

In the meantime many other investigations had produced evidence tending to show that lack of oxygen and increased carbon dioxide were not responsible for any of the observed harmful effects except under very unusual conditions. Among these were Leblanc (5) who showed that the oxygen content of an occupied room seldom was decreased below 20 per cent. Regnault and Reiset (6) then showed that a decrease of 10 per cent in oxygen content of the air was necessary to produce any laborious effort of respiration. Müller (7), Bert (8) and Von Pettenkofer (9) have all produced evidence showing that percentages of CO_2 equal to or greater than the normal content of the air could be inhaled without any harmful physiological manifestations.

The old idea of a toxic substance was revived by Rosenau and Amoss (10), who claimed to have produced anaphylactic sensitization of guinea-pigs by means of condensed products of expired air. Sewall (11) has also suggested something similar, though from a somewhat different viewpoint. However, this point has, it seems, been definitely settled by Weisman (12) and by the experiments of the New York Ventilating Commission (13), so that it may be safely stated that there is no toxic, organic substance in expired air that can account for the harmful effects observed.

III. Observations and Experimental Evidence.

Along with the death of the old ideas, a new conception began to be developed which had its first champion in Hermans (14), who suggested that the harmful effects noted in ill-ventilated rooms resulted from the increased temperature and moisture of the air preventing the body from maintaining a proper thermal balance. Many others, notably Haldane (15) and his co-workers, made observations supporting this view, but it was not until the work of the latter was published in 1905 that the new conception came to be considered more generally, though it had received valuable support several years before in the work of Billings, Mitchell and Bergey (16).

It will be necessary for the moment to go back again among the pioneers in the field of the physiology of respiration in order to gather the evidence upon which this new conception was based. As a working basis it may be stated that the general problem of bad ventilation is inseparably linked with that of respiration, and the original investigations all deal primarily with the latter.

More than one hundred and thirty years ago Lavoisier (17) found that a man in repose and fasting, at an external temperature of 32.5° R., consumed per hour 24.002 l. of O_2 while a man fasting and doing work necessary to raise in 15 minutes a weight of 7.343 K. to a height of 199.776 m., consumed per hour 63.477 l. of O_2. Increased activity then means an increase in oxygen consumption. Later evidence produced by numerous investigators, most notable perhaps that of Benedict and his co-workers, in calorimetric experiments have shown that oxygen consumption means heat production. Since man is a relatively homoiothermous organism, it follows that increased heat production from activity means approximately proportionate heat elimination.

Quite recently McDonald (18) performed experiments in which a man

pedaling a bicycle ergometer, having a surface temperature of 34° C. increased his surface temperature 0.5° C. in one hour, the rectal temperature remaining constant. Heat production increased about 100 calories per hour. The following table is presented to further illustrate this result:

Mechanical Work Performed	Aver. Heat Production in Calories	H. P.
13 K	182	0.02
19 K	199	0.03
43 K	297	0.07
56 K	346	0.09

The rectal temperature remaining constant while the surface temperature increased, indicates an effort on the part of the organism to eliminate the excess heat through the surface.

It has also been established that the carbon dioxide output is greatly increased in muscular work so that the respiratory quotient is increased (19). The following table illustrates this point (20):

	Ave. CO_2 Output	Ave. O_2 Consumption	True Resp. Quotient
At rest	5.75	14.75	.90
After exercise	6.79	14.02	.99

Bayliss (21) affirms that the only source of heat that is of practical importance lies in muscular contractions, and if the heat is not allowed to escape there is a normal temperature fluctuation range of about 4° C.

Hill (22) asserts that there is as much heat liberated in the period immediately following a muscular contraction as there is during the period of actually contracted state. He further states that anything diminishing oxygen tension will slow the liberation of heat.

The increased elimination of CO_2 in activity has already been alluded to, and in this connection it may be stated that the proportionate elimination of this product in rest, moderate exercise and hard work is, roughly, as 2 : 3 : 6. (23). Schierbeck (24) states that while there is ordinarily not a large percentage of CO_2 eliminated from the skin, this part is given off through the sweat glands. Between the temperatures of 29° C. and 33° C., the amount is about constant, but between 33° C. and 37° C., the amount is increased three to four-fold with the body completely at rest throughout the experiment. This observation is especially interesting when taken in connection with the work of V. Willbrand (25) who asserts that, when the body is completely at rest, there is an increase in the elimination of water in proportion to the rise of external temperature.

While many other experiments have been done along these lines, it is sufficient on the basis of the evidence presented to state that muscular exercise increases in general the output of metabolic products and of heat. While it is evident that the elimination of waste products as well as heat must go on unhindered in order for the body to maintain its highest physiologic efficiency, our problem deals only with heat elimination and for the time, at least, the discussion must be confined to this factor.

Returning again, then, to the question of the observed effects of poor conditions of ventilation, Flügge (26) and his collaborators added to the evidence that such effects were due to heat stagnation and Hill (27) and his colleagues confirmed those results some years later.

With the great mass of evidence already accumulated as a working basis, the New York Ventilating Commission attacked the problem on a large scale with well controlled apparatus, and carried out many valuable experiments, deducing

much unquestioned evidence in an effort to correlate observed phenomena with fundamental physiological laws. One of the earliest results dealt with the effects of increased humidity and temperature on the vascular system (28), showing that the Crampton index of vasotone was increased or improved at 20° C., 50 per cent relative humidity, and decreased at 30° C., 80 per cent humidity. The Barach index of cardiovascular energy fell under the first conditions, but under the second it rose beyond that assigned by the originator for a normal individual.

The lowering of vasotone interferes with ready adaptation of the vascular mechanism to changes of position or to reflex stimulation. This would unquestionably be a factor in the earliest onset of fatigue, in that muscles and other organs might not be readily supplied with blood.

Another result of this series of experiments was the observation that the heart rate is increased in hot, humid atmospheres, in about the same proportion as in moderate exercise. If then, there is moderate exercise under such conditions, the effect is comparable to that of violent exercise under favorable conditions and will fatigue the body in proportion.

These results confirm the observations of Moorehouse (29) that increased surrounding temperature increases the heart rate, the respiration rate, and so decreases the respiratory volume, and induces vasodilatation. This author asserts that the increased heart rate is due to direct action on the heart muscle. The latter assertion is, however, denied by Martin, Gruber and Lanman (30), who made observations on men running upstairs on a hot, humid day. A summary of the results is given in the following table.

These experiments are significant in view of the fact that they illustrate the close relationship between the effects of

	Preliminary	Maximum	4 Min. After	24 Min. After	64 Min. After
Ave. pulse rates..	57	160	99	70	70
Ave. temp. °C....	36.73	37.42	37.42	37.15	36.95

fatigue and the effects of increased temperature of the body. A further important indication of this relationship is found in the fact that the effect of normal fatigue substances on normal muscle is one of depression just as the effect of temperature is depressing. It is suggested that, in some way, poor conditions of ventilation produce effects that are manifested in the physiologic machine in much the same way as the effects of fatigue are manifested.

A comparison of metabolic activity in fatigue with that under increased temperatures serves further to illustrate this relationship. Harper and Halliday (31) performed a series of experiments extending over a nine-day period, during the first three days of which the subjects were at rest, the second three day period undergoing exertion and the third period of three days at rest again. During the second period the average pulse rate increased from 100 to 193 and the temperature from 98.3° F. to 99.1° F. Nitrogen excretion was increased as follows:

First period.....	15.7032
Second period.....	16.2505
Third period.....	15.0685

The nitrogen depended on increased elimination of ammonia, uric acid and xanthine. The specific gravity of the urine and the excretion of urates were also increased during the middle period.

Argutinsky (32) has shown that the nitrogen excreted from the skin may amount to about 4.7 per cent of that excreted from the urine.

These results are of special significance when considered in the light of the fact that in febrile diseases, in general, there is an increased output of nitrogen, which indicates destruction of tissue and protein, and there are probably also found toxic protein products, resulting from incomplete oxidation of intermediate products of protein metabolism.

The increased output of ammonia indicates acid intoxication. Acetone, diacetic acid and oxybutyric acid are also found in these cases.

While it is probably unfair to compare the observations on pathological subjects with those made on normal subjects, the comparison does indicate the trend of activity in fatigue, which, if carried far enough, would undoubtedly result in metabolic activities resembling those observed under pathological conditions of febrile diseases.

Fletcher and Hopkins (33) have found that the lactic acid content of amphibian muscle is increased by heating at 40° C. and that if the muscle is placed in an atmosphere of oxygen, the lactic acid formed will soon disappear. This increase does not occur at 30° C. It is well known that lactic acid is formed in fatigue of isolated muscle and that it will disappear in exactly the same way if the muscle is suspended in oxygen. If, then, we may suppose that the processes are similar in the two cases, the fact observed previously by Fletcher (34), that the rigor induced in muscle by fatigue, or warming is accompanied by a loss of osmotic properties, is of great importance, as it may be possible that this is a partial factor in lessening the working power of muscle in increased temperatures.

In a discussion of the effects of changes of arterial pressure on fatigue Gruber (35) asserts that a rise in pressure increases the contractile efficiency of a muscle because fatigue products are more readily removed. It seems that this fact may bear some relation to the lowering of blood pressure with increased temperature and to the observation of Patrizi (36) that human muscles subjected to localized hot baths are more readily fatigued than if normal.

The combined work of numerous investigators has established the fact that the average man gives off approximately 24 calories of heat per kilogram of body weight in 24 hours and that for every square meter of body surface there is produced in 24 hours from 700 to 1,000 calories (37). This indicates that metabolism is proportional to body surface area. From 85 to 90 per cent of all heat loss takes place through the skin by evaporation of perspiration, by radiation, convection, and conduction. In raising the external temperature from 7° C. to 30° C., the heat loss by radiation and conduction is cut down 58 per cent. A partial balance is maintained by an increased loss by evaporation of about 300 per cent. However, the total metabolism measured in calories is decreased about 35 per cent. The percentage variation is greater at higher temperatures. If, at the same time, the moisture content of the atmosphere is increased it will cut down, progressively, the amount of heat loss by evaporation. The efficiency of metabolism will then be affected in the ways already shown.

Furthermore, "in a moist and humid atmosphere the blood vessels of the skin are dilated and overcharged with blood, and the brain and spinal cord, among other tissues, are rendered correspondingly anemic. This is sufficient to account largely for the feeling of weariness, the indifference and apathy toward laboring that are then present" (38).

There are two methods of controlling heat production in the body, namely, by food consumption and by muscular exer-

cise. If heat elimination is interfered with in any way, as would occur in case of an increase of temperature or humidity, or both, in the surrounding atmosphere, the physiological mechanism will try to compensate for this by decreasing heat production. This alone would tend toward a decrease of muscular activity. But if muscular activity continues, it inevitably follows that body temperature will rise. Then will follow the effects on the tissues which have already been indicated. A further evidence of this is found in the fact that the carbon dioxide output, which is taken as a measure of metabolism, is decreased with a rise of atmospheric temperature even though the body temperature remains constant. Thus, to maintain a constant body temperature, metabolism must be cut down and this is done reflexly through the heat regulating center, and not by voluntary exercise of the will, or as a result of the unpleasant sensation of warmth.

The value of such control is illustrated by the case of a man under the observation of Zuntz, who possessed no sweat glands and who thus experienced a rise of body temperature to 40° or 41° C. on the slightest muscular effort, and was totally incapacitated for work in summer, as a result.

IV. Discussion.

Thus far it is apparent that high temperature and humidity of the air tend first to decrease metabolic and muscular activity though the exact interrelation of these two factors is not yet certainly determined in this particular connection. If the external conditions persist there is a sufficient interference with heat loss that the body temperature will be increased. This increase, while slight, is still sufficient to interfere with body processes, though in what ways is not yet specifically known, except that it appears that there may be a relationship between metabolism in fatigue without increased body temperature and in increased temperature exertion.

In an effort to find out how much decreased activity under unfavorable conditions of ventilation is due to disinclination, a series of determinations of the blood sugar was made by Lee and Scott (39) with the result that cats confined under conditions of 33.08° C. and 89.5 per cent humidity showed only 87 per cent of a previously determined normal blood sugar content. In another series (40), in which the most unfavorable condition was one of 33° C., 90 per cent humidity, the blood sugar was only 94 per cent of normal. The total amount of blood also was decreased by 8 per cent. In this series the working power of the muscles was tested and it was found that those from animals under conditions of 33° C., 90 per cent humidity, showed a decrease of 11 per cent in the duration of the lengths of working periods and a decrease of 24 per cent in the total amount of work done. From these results it is apparent that the lessened efficiency under unfavorable conditions is not due to inclination, nor alone to anemia of the nervous system as has been suggested.

One other important observation by the New York Ventilating Commission was that the appetite, as measured in calories of food consumption, was decreased in human subjects in an unventilated room even when moisture and temperature are controlled and there are no other unfavorable manifestations (41). It is suggested that this may, in some way, be correlated with a slight decrease in oxygen. A further conclusion was that neither excessive carbon dioxide nor bad odors in any way caused any discomfort or decrease in efficiency.

While the deleterious, physiological effects of increased moisture and temperature are of themselves sufficient argu-

ment for improvement of such conditions, there are many other points that must have consideration. "One of the most important conditions influencing both chemical and pharmacological reactions is temperature" (42). A moderate increase of temperature—within physiological limits—will augment the action of drugs, whether harmful or not. It follows, then, that any substance, whether exogenous or endogenous, will act more powerfully on the body, even if the body temperature rises less than one degree, and from this it follows that workers in a hot, moist atmosphere would be less resistant to substances breathed or ingested and to auto-intoxicant products of fatigue or metabolic activity. The first of these two conditions is well illustrated by recent observations on mustard gas, which is found to be from three to four times as destructive at 20° C. as at 10°, though the fundamental reason for this is not yet apparent. In view of the recent claim of Segâle (43) that the heat of inflammatory processes has its origin in the biochemical activity of the cellular elements, it seems possible that an intoxicant action once started under unfavorable conditions of temperature might work in a vicious circle by local generation of heat.

Another recent development of possible interest, whose significance cannot yet be determined, though it may be a factor in bodily resistance variations, is the recent claim of Murphy and Sturm (44) that the blood of animals exposed to heat shows an initial fall of the total white count by decrease of both lymphocytes and polynuclears, followed by a rise in both elements. Nakahara (45) claims that the resultant lymphocytosis is due to increased proliferation in the germinal centers of the spleen and in the lymph glands, in reaction to destruction of lymphocytes by heat.

Another possible factor in the explanation of the fundamental reactions responsible for the deleterious effects of increased moisture and humidity lies in a study of electrical reactions of cells under these conditions. No observations on this point have come to the attention of the author, but the possibilities therein are suggested by the observation of Rosa and Babcock (46), that the resistance of metallic substances varies with humidity.

Still other possibilities that must await future investigations are the hydrogen ion concentration of the blood and other body fluids, the effect on the production and activity of internal secretions and the concentration of alveolar carbon dioxide under conditions of increased temperature and humidity.

The effect of air motion would, of course, tend to a more ready elimination of heat from the body by breaking up the envelope of stagnant air in immediate contact with the body, which would naturally have a higher content of moisture and a higher temperature than the air farther removed. But it is possible that this is not the only factor of importance in connection with air motion as suggested by Sewall (47), who states that the temperature nerves of the skin may be specific organs for the regulation of body metabolism, though on purely theoretical grounds. However, this point also must await further investigation.

V. Summary and Conclusions.

A survey of literature on the subject shows that investigations of recent years have proved that conditions of ventilation depend on control of moisture, temperature and motion of surrounding air, and that when moisture and temperature rise even moderately, and the air is allowed to remain stagnant, there is a decrease in physiologic efficiency and that this effect is dependent on inter-

ference with elimination of heat from the body. If this interference is sufficient the body temperature may rise.

The rise in body temperature acts, in a variety of ways, to the detriment of the body, as shown by disturbances of metabolism, decreased working power, and early onset of fatigue. Neither the diminution of oxygen, the increase of carbon dioxide, nor the generation of odors are of themselves factors in these effects, with the possible exception that decreased oxygen may affect the appetite.

On account of the similarity of observed effects of fatigue to those of the now recognized poor conditions of ventilation, it is apparent that there is a close relationship between the two conditions and it may be that the effects are the same though the mechanism is not clearly outlined.

It is apparent that the processes underlying the action of increased temperature have not yet been sufficiently determined but it is possible that the temperature nerves of the skin, the hydrogen ion concentration, the osmotic properties of the cells, and electrical reactions of the body tissues may be of importance.

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REDUCTION OF INFANT MORTALITY BY ECONOMIC ADJUSTMENT AND BY HEALTH EDUCATION.

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This is an argument for maternal nursing to reduce infant mortality. Dr. Levy does not place much responsibility on poverty as a cause of loss of infants, but emphasizes the effect of women in industries. He argues for education of the midwife because she is the family adviser of many foreign-born groups. He argues from results in Newark.

INFANT mortality is the resultant of various anti-social forces, most of which can be grouped under ignorance and economic and social conditions that interfere with maternal nursing. Syphilis, which is the cause of about 25 per cent of the stillbirths, and continues its destructive influences into the first years of life, maiming where it does not kill, can properly, for our purpose, be grouped under ignorance, as only through a better understanding, a greater mental and moral development will it be eliminated. Certain diseases might appear to some to be entirely outside of this classification, but in most instances the names of the diseases placed on the death certificates are far from giving the true causes of deaths in infancy. Diseases, like congenital debility, immaturity, prematurity, accidents at birth and convulsions—which are given as the cause of death in about 75 per cent of the instances in the first month of life—are but the obvious results of syphilis, alcoholism, overwork, under-nourishment of mothers, neglect during pregnancy, poor obstetrics or insufficient and improper care after birth. Likewise marasmus, malnutrition, summer diarrhœa, gastro-enteritis, bronchitis, pneumonia, measles and whooping-cough, which appear on the death certificates to explain the large number of deaths in the first year of life, represent, in most instances, merely the terminal condition, the condition with which the child died, not that from which it died. The true cause goes back to the prenatal conditions, like over-work, excessive fatigue, syphilis and the like, or to the obstetrical service, or lack of service given at the time of birth, or to improper care and advice given in the early weeks and months of life which resulted in unnecessary weaning, frequent gastro-intestinal disturbances and, finally, malnutrition. On such soil infection finds a fertile field and the child then is said to have died from bronchitis, pneumonia, measles or whooping-cough, when the real preventable cause is overlooked or forgotten.

Among the social and economic conditions affecting infant mortality I would not give a very important place to poverty; indeed, I cannot believe that low income bears any very constant or causal relation to high infant mortality. It is worth noting that, though in previous reports of the Federal Children's Bureau, income seemed to bear a very direct relationship to infant mortality, in the later study of Brockton, the investigator, seemed very much at a loss to explain the low mortality in the group with the lowest income, averaging about

$650 a year, because low income was supposed to be very directly associated with high mortality.

Attention was directed a number of years ago, by Sir Arthur Newsholme, to the fact that poverty could not be held as one of the important causes of infant mortality, as he was then impressed by the much lower infant mortality rates observed among large Italian families, even though they were living in the same houses with smaller English families with larger incomes and higher social standards.

I wish to hasten to add that I am not opposed to a high income for myself or any one else and that I sympathize with the efforts to increase wage standards, but my studies in infant mortality have led me to believe that other factors are more essential and bear a more direct relationship and that the handicap of meager income, no matter how much it may interfere with the development of the family as a whole, need not and does not affect the infant if certain conditions essential to its well-being are obtained, the most important one of which is maternal nursing and "mothering," and, on the other hand, that conditions which interfere with maternal nursing are but slightly compensated for by higher incomes.

While facts to substantiate this view can be obtained from various sources, I wish to present an intimate study of two wards in the city of Newark which seem to me to present convincing evidence that at least our babies do not depend for their happiness on money.

Ward 1 and Ward 8 are adjoining wards. Ward 1 has a population of approximately 27,000 with an area which would give about 162 persons per acre, and Ward 8 has a population of approximately 24,000 with an area which would give about 19 persons per acre. Ward 1 is a thickly populated, tenement house district where mothers have large families and irregular small family incomes. Ward 8 is our finest residential section where the mothers have small families, large incomes, and are busy directing the social and intellectual activities of the community.

You will receive, perhaps, a clearer idea of the contrast of these two wards in reference to income if I tell you that in Ward 1 28 per cent of the families live in houses containing twelve or more families, 42 per cent live in apartments with two rooms; that among 31 per cent of the families there are 2 persons per room, among 19 per cent of the families 3 persons per room, among 4 per cent 4 persons per room, and 1 per cent of the families have as many as 5 persons per room; the average family income in 1915 was approximately $421 per family.

From a financial standpoint Ward 8 is the very opposite in every particular and if infant mortality bears a direct relationship to income, Ward 8 should have about one-tenth the infant mortality rate of Ward 1.

In Ward 8 the houses are detached; most of the families own their private homes, and instead of 3 or 4 or 5 persons per room we are very apt to find 3 or 4 or 5 rooms per person. Indeed, in parts of the ward restrictions placed upon the deeds of sale permit only the erection of private homes costing not less than $30,000.

Now, where do we find the lowest infant mortality rate?

The figures I am presenting are taken from a three-year period (1915, 1916 and 1917) so as to eliminate any error that might result from the special incidence of epidemics or from the use of small figures.

During this three-year period there were born in Ward 1 3,517 babies and there were 294 deaths under one year, giving an infant mortality rate of 83.5;

in Ward 8 1,805 babies were born and there were 158 deaths under one year giving an infant mortality rate of 87.5.

It does seem, after all, and we may glory in the fact, that the health and happiness of our babies cannot be bought with dollars, but only with true "mothering"—and of this our poor, and specially our foreign-born poor, often have a greater reserve than our rich and native-born mothers. It is worth while to remember this in our zeal for Americanization.

I should add there was one factor present in Ward 1 that contributed somewhat to the result, but if income were such a determining factor it should easily have been offset by the ability of the wealthy to buy what they want. In Ward 1 the Department of Health has carried on an intensive infant hygiene campaign for the past five years which has consisted primarily of teaching mothers the value and technique of maternal nursing and of insisting that maternal nursing should be made possible for each mother and baby.

This often required economic adjustment in families where the husband's income was inadequate, where the wife thought she should work in a factory, where the husband deserted or was sick or unemployed. We held the view that the nursing of an infant under six months of age was an inalienable right for both mother and infant, and that society, as represented by its social agencies, must make it possible for every baby's mother and for every mother's baby.

I am glad to say that the agencies of Newark have accepted this view and, as far as lies in their power, do not permit a baby under six months of age to be deprived of its mother's care and feeding for financial reasons.

While income does not bear a direct relationship to infant mortality, I am willing to admit that one of the most constant factors associated with high infant mortality—the employment of women in industry—may be the result of low income, but it is very important in the infant mortality problem clearly to distinguish between coincidence and direct relationship.

I shall illustrate this association first by referring to the infant mortality rates among the colored.

The infant mortality rate among the colored is two or three times as high as that of the whites in all parts of the United States. Indeed, no city with a colored population of more than 10 per cent of the total shows an infant mortality rate under 100. Now, when we come to analyze the percentage of colored women in gainful industry, particularly, the percentage of women in the age group 25–34, and more particularly of those that are married, we find that there is a sharp drop among the white from the previous age group of 19–24, while there is no reduction at all among the colored. Indeed, an examination of the census reports shows that the percentage of colored women in employment is practically very little affected by age or marital condition.

The relationship of industry to infant mortality is clearly showed in another way. When we come to study the United States by geographical regions we find that the highest infant mortality rates are in the southern and eastern sections of the United States, the lowest in the northern and western. In these two groups we find the same difference as to percentage of women in industry and particularly married women 25–34, as we do among the colored in the south; that is in the New England section a very high percentage of women 25–34 are in industry, while in the West a very small percentage of women 25–34 are in indus-

try. Now it will readily be understood that this is not so much a difference in income as a difference in character of industry.

In New England, and also in the Atlantic Division, the industries are of that kind that can and do employ women, such as the textiles, silk, worsted, gloves, talking machines, food canning and needle trades, in the South tobacco and cotton raising, while in the West we have the heavy industries where women cannot be employed, such as foundries, lumber, mining, furniture making, locomotives. When we go further to analyze each geographical division by states we again find the high infant mortality rates associated with the same fact.

It seems to me that the value of studying infant mortality by such large groupings is that we eliminate at once all minor variations, such as difference in milk supply, water supply, condition of streets, sanitation, etc., because we know that the good conditions are not all associated with one region and entirely absent in another region.

The important relationship of women in industry is even more strongly brought out when we study the cities, large and small, and even rural communities, with high infant mortality rates. Large cities will often have a low infant mortality rate and small cities, like Gloversville in New York or Millville in New Jersey, will have a high infant mortality rate, because in the small city there will be found an industry, like the one in Gloversville as can be gathered from the very name itself, where women can and are extensively employed. On the other hand, towns and cities in Pennsylvania may be without sewage disposal or health supervision, with unsanitary streets and bad housing, and still have a low infant mortality rate. A western mining town will show an unusually low infant mortality rate and highly socialized eastern city will show a high infant mortality rate.

Indeed, the relationship of women in industry to infant mortality is so constant that I have found it safe to estimate the infant mortality rate of a city by the character of its industry and it is safe to anticipate a high infant mortality rate when we know that a community contains an industry which offers employment to unskilled female labor. With this view as one of the important causes of infant mortality, we are in a position also to understand sudden increase in the infant mortality rate in certain cities.

It will be found, for instance, that little communities on the eastern border of Pennsylvania have had an increase in infant mortality rates during the past five or ten years. A partial explanation will be found in the fact that, during this period, some of our silk industries of Passaic and Paterson, on account of labor difficulties, have moved into eastern Pennsylvania and brought with them greater prosperity for the towns of eastern Pennsylvania and a greater destruction of infants.

The one thread running through all the mass of contradictory statistics on infant mortality will be found to be conditions, like industry, that interfere with maternal nursing and mothering.

In this paper I wish to ignore the effect of industry upon the woman herself before the birth of the baby and its relation to miscarriages, stillbirths and deaths in the first days and weeks, and to emphasize only that it makes for a high infant mortality because it interferes with mothering and maternal nursing.

It is only fair to point out that other conditions and forces in a community might have the same effect, such as social agencies which try to solve family problems by offering employment to nursing mothers, day nurseries which tender-

heartedly offer to take care of young infants so that the mother may become self supporting, hospitals that accept young infants but refuse to take in their nursing mothers or are willing to treat and operate nursing mothers but refuse to accept their nursing infants.

After we have accepted this view of the relation of income and various social and industrial and economic conditions to infant mortality it becomes obvious that only through that kind of public health education that develops and maintains maternal nursing effectively will infant mortality be reduced.

To sum up my views, therefore, on the first phase of the subject assigned to me, I would say that a considerable reduction can be effected in infant mortality by that form of economic adjustment which will guarantee to every baby its birthright of maternal nursing and "mothering," and to every mother her maternal right and privilege to mother and nurse her own infant.

In discussing what can be accomplished by public health education in the reduction of infant mortality, I am reminded of a definition of scientific training as given, I believe, by Matthew Arnold who said, "scientific training consists of learning what to look for and where to look for it," and so I believe that public health education for the reduction of infant mortality, to be effective, must be directed to those things that really bear a very direct and pertinent relationship to infant mortality and must be so given that it can really effect these factors.

In speaking to workers in large cities I would give first place to the education of the midwife because, in large cities, the midwife attends approximately 50 per cent of all the births and as much as 80 per cent of the births in certain foreign-born groups and among these groups the midwife is not only accoucheur but also family doctor and friendly advisor. What can be accomplished by supervision may be gathered from a summary of the results obtained in Newark during the past three years.

In 1917 the infant mortality rate, the death rate of babies who died under one month of age and the puerperal death rate were lower among the babies and mothers cared for by midwives than those cared for by doctors or in hospitals. The effect on the city as a whole can be gathered from these figures:

In 1910 puerperal death rate was 6.4 or 1 in 150.

In 1917 puerperal death rate was 2.4 or 1 in 450.

I had occasion, two years ago, to present to the American Association of Obstetricians and Gynecologists a complete study of the results obtained in Newark in midwifery practice in which we showed in detail that, with proper training, supervision and regulation, the results for the babies and mothers were as good as those obtained in general medical practice or hospital service. As a result of this public health education among midwives who reach each year over 5,000 mothers we feel we have added 100 teachers of infant hygiene to our staff, and that the policy of ignoring the midwife or denying her existence helps no one—except the undertaker.

The education of the mother in the essentials of infant hygiene at a time when this knowledge can insure proper prenatal care, proper supervision for labor and above all else prevent unnecessary weaning or improper technique in maternal nursing, prevent cracked nipples and breast abscesses, is the most effective manner of reducing infant mortality and of increasing the health and vigor of the children who live.

This instruction should be given during the prenatal period if possible, but under

no circumstances, I insist, later than two weeks after the birth of the baby, for it is to be remembered that if we wait until the mother brings the baby to a clinic a consultation station or milk station, the baby is usually three months of age and more than one half of the babies who ordinarily die in the first year of life are already dead. It is to be remembered that even at the end of the first month one-third have passed away.

The purpose of all our instruction must be to maintain maternal nursing. If this is accomplished the death rate is kept down and health and normal development maintained. If the number of breast-fed babies is reduced, no matter for what reason, the health index falls and the death rate goes up even though experts on infant feeding or milk stations are able to salvage some of the wrecks.

In certain individual cases money can buy service, better physical environment, perhaps life, but generally speaking the mother is the baby's whole environment and if we will in our social and industrial development guarantee to each baby its mother and to each mother her baby we may feel sure that we are treading the right road towards normal family life, where each mother will be permitted to develop spiritually and physically as nature intended she should, with intimate contact with her baby; and where each baby will be kept totally and physically dependent upon its own mother as evolution has definitely shown it should, and each baby will be given its own natural food, its natural caretaker and its normal environment.

Public health education and economic adjustment that makes possible these normal minimum standards will reduce infant mortality.

SCHOOLS AND SCHOOL CHILDREN.

OSCAR W. HALLIN,
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Here is the opinion of a teacher. He attacks the problems of school hygiene from the practical viewpoint of a layman who is a daily worker in the schoolroom itself. He expresses some very radical opinions, but he gets at them honestly and through his own experience. : :

THE effect of school attendance on the health and growth of children has been investigated by several competent observers in different countries. From these investigations it has been determined with certainty that elementary schools have a harmful influence on the health of children.

One of the investigations on this subject was made by Dr. Wretlind, physician in the schools of Gothenburg, Sweden. During a period of twenty years he kept an accurate weight record of all the pupils in three girls' schools. He weighed the pupils twice each year, at the beginning and at the close of the school vacation. The weight taken at the beginning of the vacation showed the gain during the 9 months of school while the weights of the pupils at the close of the vacation showed how much the children had increased in weight during the three months of rest. The following table is a summary of his observations, showing the average increase in the weight of the pupils:

Age of Pupil	Gain in Weight During		Monthly Gain During	
	9 mo. School	3 mo. Vacation	School-time	Vacation
8	3.86 lbs.	1.60 lbs.	.43 lbs.	.53 lbs.
9	4.07 "	2.01 "	.45 "	.67 "
10	4.50 "	2.52 "	.50 "	.84 "
11	5.81 "	2.73 "	.64 "	.91 "
12	7.29 "	3.57 "	.81 "	1.19 "
13	5.95 "	4.93 "	.65 "	1.64 "
14	7.13 "	4.67 "	.79 "	1.56 "
15	4.03 "	4.61 "	.45 "	1.54 "
16	3.58 "	3.35 "	.40 "	1.12 "

This table shows that the monthly gain in the weight of school children is much greater during vacation than during school months. It should be remembered in this connection that the vacation is during the summer months which constitute the most unfavorable time of the year for gaining weight.

Dr. Schmidt-Mounard of Leipzig also spent several years in making observations on the growth of children in and out of school. This investigation has given further evidence on the subject. He states positively that during the first year at school the growth of children, both in height and weight, is less than during any preceding year. Thus during the first year at school the average child gains only 2½ pounds in weight compared with 4 pounds in previous years. The increase in height is only 5 cm. compared with 7 cm. the year before entering school. This record seems to refer to children 6 years old which is the usual age for children to enter school in Germany. Dr. Schmidt-Mounard also came to the definite conclusion through his observations that children who do not go to school before they are 7 years old become stronger and are in all respects better developed than those who commence school a year earlier.

What is the matter with the elementary schools?

Doubtless there are many factors in school that are detrimental to the health of children. Among these perhaps the most serious are:

1. Deficient fresh air and sunlight.
2. Deficient physical exercise.
3. Mental overstrain or fatigue.

It is essential for the proper health and growth of children that they constantly breath pure, fresh air. In spite of improvements the ventilation of schoolhouses is far from sufficient. The air in the schoolroom is not as pure and fresh as the outside air. Open air schools seem to be the only solution of this problem. Every elementary school, whether for healthy or sickly pupils, should be an open air school.

Children need much physical exercise. In the elementary schools the pupils are obliged to spend more than five hours daily in studying and reciting their lessons. Sometimes this period is still further extended by home study. This means five hours or more of physical inactivity for each school day. It is absolutely unnatural for children to be confined thus. This lack of physical exercise can have only one result, deficient physical and mental growth.

Poets used to delight in extolling the care-free happiness of childhood. But times are changing. The prosaic business age in which we live has as little respect for the joys of childhood as it has for the beauty and sublimity of forests. Before children have fairly ventured beyond the nursery threshold they are ushered into the mad rush and worry of "strenuous life." As a result we find them facing the responsibilities of adults before they can share the privileges of grown-up people. They are stunted and overworked physically and mentally and thereby hastened to a premature old age and death.

The elementary schools have caught the infection of the "strenuous life." Colleges are trying to turn out graduates 20 years old. That means that the high

schools must speed up to furnish 17 year old recruits for the colleges. Then the elementary schools must rush their pupils so they will be ready to enter high school at 13. All the while colleges, high schools, and elementary schools are each trying "to keep abreast of the times" by steadily increasing the contents of their courses of study. Where is this rush going to end?

Children are overworked in the elementary schools. Tests made with pupils 11 or 12 years old show that after 35 minutes of continuous application at any one task they exhibit marked evidence of overstrain. This is indicated by greater carelessness in the writing, more errors in the work, uncontrolled movements of the body, and the inability to work rapidly. With younger children the period is considerably shorter. We find that different investigators have reached the conclusion that children should never be held down to continuous mental effort longer than half an hour and with young children much less,—10, 15, or 20 minutes, depending on age. After each such period of mental work the children should be given an ample period for mental rest and recuperation. In our elementary schools no attention is paid to such matters. Children are required to work four periods daily, each period continuing more than an hour. It is beyond doubt that a prominent investigator on this subject, Kræpelin, was right when he said, "The fact is undeniable that schools exact more from pupils than their intellectual ability admits."

Fatigue is a physical poison. From investigations it has been found that this chemical poison seriously affects both the physical and mental health. There is a general agreement that dyspepsia may be caused by excessive brain work. Fatigue resulting from overstrain at school occasions the destruction and disintegration of bodily tissue. The physical vigor is thereby diminished and the resistance to disease lowered. It may also cause serious and permanent mental defects.

Very few children are physically perfect at birth. This means that the vast majority of children are handicapped by more or less serious mental defects. These defects may be permanent abnormalities or simply that some faculty is undeveloped. Such children may outgrow or at least improve many of these defects if they are brought up under proper conditions. On the other hand, if they are compelled to live under unfavorable circumstances, their condition is aggravated. Mental fatigue at schools is one of these unfavorable circumstances. It is easily understood that when a chain is under strain the weakest link will be first to break. It is just as plain that the weaker faculties of a child will fail first and suffer most when under mental overstrain. This will aggravate the defect. In this way many physical and mental defects that might have been overcome under proper conditions develop into permanent and serious defects.

One example will be sufficient to illustrate this fact. It has been observed that the Americans are becoming a nation with weak eyes. It is well known that the eyes of many children are not naturally very strong. When they attend school they must employ their eyesight a great deal. It is inevitable that mental fatigue will increase the eye weakness of these children before it affects their stronger and less employed faculties. Mental fatigue is one of the most prominent causes of poor eyesight today.

Poor eyesight is only one of the evil results of overstrain at school. Nervous defects of all kinds are increased by mental fatigue. For this reason nervous children suffer most from this cause. It is important to protect all children from mental overstrain. The nervous children,

however, being more subject to it than others should receive especial care and protection.

Every one who realizes the unfavorable influence of schools on the health of children will agree that prompt measures should be taken to remove these detrimental influences. What must be done to accomplish this?

1. There is needed more fresh air in the schools. This would require more open air schoolhouses.

2. There should be a change in the age for elementary school attendance. It is a serious matter to send a child less than 7 years old to an elementary school. The compulsory attendance laws should be radically modified. The physical condition of every child should be examined before he enters school. Children found to be approximately healthy and normal should not be permitted to enter school before their seventh birthday. Nervous, feeble, and puny or unhealthy children should not be permitted to begin school before 8 to 10 years of age, depending on their condition. There should also be special schools or classes for children of this kind.

3. There is needed radical change in the school work. The school work periods should never be much more than half an hour each in duration for the advanced pupils. Younger children should have even shorter periods. Every study period should be followed by a recess or rest period. With the youngest pupils these periods should be at least twice as long as the preceding study period. The recesses should gradually be shortened as the children grow older. In the advanced grades the study periods and recesses should be about equal in length. There should also be an extra half hour recess at noon for lunch.

The recesses should largely be devoted to physical recreation and athletics. There should, however, be some periods for both physical and mental rest. The youngest pupils should have more than one such rest period daily.

4. The two foregoing changes would in turn necessitate two other important changes in elementary education. Instead of completing the elementary course of study at the age of 12 or 13, the children would need to continue until they were 17 years old. The course of study would also have to eliminate all whims and fads of modern pedagogy. The curriculum should include only the essentials of elementary education without "laces or fringes." These perhaps have their value but if the health of the children shall be properly cared for there will be no time for these things in elementary schools.

5. There should be much physical recreation during the recesses. Some of this might be disciplined athletics. However, this form of exercise requires much nervous concentration and would, therefore, not give the nerve rest which the children need most. It would be much better to have most of the physical exercise in an informal way such as games and informal sports. These should be graded so as to be especially adapted for children of different ages. This "play education" should also be used as a means to teach the children honesty, unselfishness and morals generally. For this reason all recreation of doubtful moral educational value should find no place on a school playground or in the playroom. All games and recreation should be valuable factors in physical education, and of unquestioned value as agencies in moral culture. It is needless to say that the children should be supervised during the recesses although the supervision should be as informal as possible.

REPORT OF THE SECTION ON PREVENTIVE MEDICINE AT THE MEDICAL CONFERENCE AT CANNES.

The official reports of the Medical Conference held at Cannes, France, April 1 to 11, 1919, are reaching this country. Through the courtesy of Hermann M. Biggs, A. B., M. D., LL. D., Commissioner of Health, New York State, the JOURNAL has been permitted to abstract the Report of the Section of Preventive Medicine. This report was adopted by the section and presented to the Conference. It is here given with some abbreviations the abstracts being included within brackets.

As preventive medicine includes practically the whole field of public health, and as certain very important subjects have been considered in special sections, and reports upon them have been submitted to the Conference, in the limited time at our disposal we believe it is desirable to consider briefly a few of the broader questions concerning public health legislation, administration, etc., and several special topics, the immediate treatment of which seems important.

It is appreciated that in the report of this section, there will be some duplication of recommendations already made by other sections of the conference. This is intentional; and such recommendations are made here for the purpose of emphasizing the importance of work of this character.

PUBLIC HEALTH LEGISLATION.

An efficient Public Health Administration presupposes the existence of sound public health legislation. This will be found to be entirely lacking in many of the countries where the most unfavorable health conditions exist, and where more adequate measures for the improvement of the public health are most needed. The creation of a public sentiment demanding good public health laws must usually precede their adoption.

We believe that the proposed Central Bureau should assemble and digest the public health laws and the sanitary codes of the important countries and cities of Europe and North America, and distribute the digests widely among public health authorities. When new legislation is thought to be needed in any country, the Central Bureau should stimulate the national Red Cross society to initiate activities looking to its enactment. The Central Bureau should also aid the respective national Red Cross societies in drafting such legislation as seems best adapted to the existing governmental functions in different countries and to the customs and habits of the people. This work is extremely important and will require a broad knowledge of public health, sound judgment and great tact. In general, the public health law in each country should create the necessary organization and machinery for effective health administration; but in other respects it should be very broad in its provisions and not specific, and should provide for the creation of a small expert body (without administrative or appointive functions) to which is delegated the power to enact regulations relating to any and all matters affecting life and health. These regulations should have all the force and effect of law, and they can be readily amended or added to as may be required by new conditions, or by the extension of health activities, by the appearance of new diseases, or by additions to existing knowledge of known diseases. We regard this work in stimulating the enactment of wise public health laws as one of the important activities of the Central Bureau.

PUBLIC HEALTH ADMINISTRATION.

There are several phases of public health administration of such great importance that they should receive special mention and consideration. In this connection we wish strongly to emphasize that while public health administration is wholly a governmental function, yet voluntary organizations of various kinds are, under many conditions, absolutely essential in order to create the public opinion necessary to cause the enactment of the required legislation or to bring about official action.

(a) **Registration of Vital Statistics and Notification of Certain Infectious Diseases.**—The enumeration of the population of a country at regular periods, the accurate registration of births, stillbirths, deaths and marriages, and the notification of certain infectious diseases are of fundamental importance, and constitute an absolutely essential preliminary to the formulation of an effective campaign for the general betterment of the public health in any country.

Special activities directed toward the control of various endemic or epidemic diseases may be attended with considerable success when such data are not available, but the general and permanent betterment of health conditions in a country or community must be presented or accompanied by the accurate registration of vital statistics. We believe that the Central Bureau should initiate activities looking to improvement in this respect in many countries.

In this connection an effort should be made to have the vital statistics in all countries standardized and tabulated in such a way that comparable

data on important subjects are available. We believe that these are now notably lacking. A few standard tables might be prepared and submitted for modification and adoption by the authorities in all of those countries where laws requiring registration and notification are now in effect.

(b) **Public Health Laboratories.**—At the present time no serious attempt should be made to undertake a program for the general improvement of the health conditions in any country or any locality without first providing for an efficient laboratory service, with such complete facilities for its use as to make it readily available without charge to all practitioners of medicine. In addition, every effort should be made to encourage and stimulate the use of this service and its proper valuation. This is the most important and perhaps the only governmental health function from which the physician receives from the authorities a really valuable service. When this service is properly rendered, it is highly appreciated by the medical profession, and it serves to foster coöperation and good feeling between the health authorities and the profession. The laboratory service should include the free distribution of vaccines and curative sera at least for use among the necessitous poor, provided that the administration is under scientific control. We believe that there is no other agency more potent in improving the standards of medical practice in a country than the service of a public health laboratory which has been administered so as to bring about the wide use by the medical profession of the facilities which it offers.

(c) **Public Health Nursing or Health Visiting.**—A very large part of all effective work in public health is educational in character; and a most efficient instrument for conveying knowledge upon various public health matters to the people, is the trained nurse or health visitor. The rapid advance in the effectiveness of public health work, which has taken place in many countries in the last twenty years is largely due to the introduction by the public health authorities of public health nurses or health visitors. We believe that the Central Bureau can render no more important service than that of stimulating and aiding in the training, and, if necessary, providing instruction for the training of such nurses or visitors in those countries where they do not now exist or are present in insufficient numbers. We believe that only with their assistance can an important health campaign be successfully carried on.

(d) **Public Health Education.**—We are convinced of the prime importance of widely disseminating among the people a knowledge of the simple laws of healthful living and a conviction as to the need of applying them. This is the most valuable means whereby we can promote their physical well being; and, with a "health conscience" formed, most public health problems become simplified and all public health administration is made more easy.

It may be said that the measure of the public health of any community is in no small degree the measure of self-help in health matters. Official and voluntary health agencies can effect much in the direction of improving the environment of the individual and preventing communicable disease; relatively they can effect little in the direction of securing hygienic observances in the intimate circumstances of living, and in the wider field of non-communicable but preventable disease. Ignorance and carelessness are here responsible for much sickness and premature death.

It is largely because child welfare work is essentially educational that so much success has been obtained in it; and we consider that, profiting from this experience, general public education should be made a prominent part of public health activities in every field of work.

Hygienic precepts and practice at school, and the training of the older girls in the essentials of infant care and home making are of fundamental importance as a means of contributing greatly to the health and happiness of a community. For those who have left school an active educational propaganda should be maintained. For popular propaganda purposes we would indicate the following as agencies of proved value:

(1) The public press,
(2) Cinema films,
(3) Posters,
(4) Exhibits,
(5) Popular lectures,
(6) Educational campaigns on special health topics in which all these agencies are employed.

We consider that for the most effective propaganda, assistance is generally necessary from experts in publicity matters.

[Special problems were next considered, housing, Town Planning, etc. In the former group suggestions are made of general nature, with reference to the control of certain epidemic diseases when normal conditions again exist in the world. At the moment, however, the dangers from typhus are such that the need for immediate action is pressing. For that reason a more definite program was outlined for its control which is given below in full, see page 687.]

[The suggestions made by the Section include the need of opinions from architects or engineers specially informed on the problems of town planning, and the possibility of giving advice and fur-

nishing proper plans by a department of the national Red Cross.]

The Report continues:

We would recommend the following as appropriate activities for the Central Bureau to undertake.

1. To stimulate the formation of national Red Cross societies where they do not exist and to strengthen and increase the membership of those already existing.

2. To coöperate with national Red Cross societies and other voluntary organizations and with government agencies in health work, thus avoiding duplication and friction.

3. To advise national Red Cross societies to add to their personnel when necessary, experts or persons informed on the subject of preventive medicine, so that they can intelligently carry out the new program of health work.

4. To submit health programs to national Red Cross societies relating to tuberculosis, malaria, child welfare, etc., along quite general lines. The programs suitable for each country will need to be modified to meet the local and national customs and habits of the people, climatic and other conditions. When necessary, to assist national Red Cross societies in putting the programs into effect.

5. To stimulate the logical development of the work of relief of Red Cross societies towards a comprehensive plan for more permanent relief through the betterment of general conditions and the improved health of the people.

6. To concentrate activities so far as possible on prevention rather than on relief—as the results of preventive work are not only permanent instead of temporary as is the case with relief work, but the cost is far less than the cost of relief and the returns out of all proportion to the cost.

7. When funds are available and conditions justify such action, to stimulate programs for the control of some of the communicable diseases which are subject to control and are widely prevalent in some countries or localities by aiding the authorities in making demonstrations in such control.

8. To aid in the control of certain epidemic diseases, such as typhus fever, cholera, yellow fever, etc., which have an international significance because they constitute an international menace.

[The report further outlines initial work to be undertaken. Two of the most urgent problems being: The decrease in birth rate and the protection of young children during their child years.]

[A program is suggested for the prevention and control of typhus fever and a plan of procedure is sketched with reference to control of any epidemic disease widely prevalent in any country or locality. The text of the report is the following:]

1. Make digest of literature with reference to the epidemiology.

2. Make survey of area with reference to the extent and degree of prevalence and its significance as a cause of sickness and economic loss.

3. Obtain sanction and coöperation of voluntary and governmental agencies in efforts for control; promoting, when lacking, full notification of cause of sickness.

4. Adopt measures shown to be effective under conditions as nearly similar as possible as relating to climate, habits, food, and economic conditions of the people.

5. Make series of demonstrations in limited areas in different localities, keeping careful records of local conditions, measures of control employed, and details of operation.

6. Tabulate results obtained and cost as related to prevalence and economic loss previously resulting from disease.

7. Prepare full reports of demonstration with all data and distribute widely in areas similarly affected.

8. Keep constantly advised as to similar work being carried on by others in other localities and collate all information so that experience of all may be everywhere available.

9. Establish follow-up service to determine ultimate results and to stimulate national and local Red Cross organizations and health organizations and authorities to continue and extend the work.

10. If results justify the expenditure, make additional administrations in other localities and conduct similar ones under different conditions, as opportunities offer and means are available.

[Housing and town planning were also considered, with suggestions of the principles which should be observed in this work.]

[The chairman of the section was Dr. Biggs with twenty-one other members representing the five countries, Great Britain, France, Italy, Japan, and the United States.]

EDITORIAL SECTION

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FOOD POISONING.

Food poisoning is a condition about which much is written, but concerning the etiology of which there seems to be very little definite information. As used in America, it has become practically synonymous with so-called "ptomain poisoning," a term which has become popularized to such an extent that it now seems to be the cloak which covers all the etiologic factors of sickness due to food, even where specific pathogenic organisms are incriminated. The word "ptomain" was first used in 1873 by Selmi to designate certain products of putrefaction which gave the reaction thought, at that time, to be characteristic of the animal alkaloids. Since then many other definitions have been suggested, but as yet an accurate statement seems impossible. "Ptomains" were last described by Vaughan and Novy in "Cellular Toxins," Philadelphia, 1902, who defined them as intermediate cleavage products of protein decomposition. Many of the so-called ptomains which have been isolated have been later shown to be impure or not poisonous at all. Chemists avoid the use of the term because it lacks precision and as Jordan in his "Food Poisoning" says, "is a convenient refuge from etiologic uncertainty."

In Europe, food poisoning is much more prevalent than in this country and yet the term "ptomain" is seldom used by the European writers, and when it is, is carefully guarded. The reason for the greater prevalence of food poisoning among Europeans is probably found in the fact that they do not use our careful methods for the preservation of foods, both in commerce and in the household. Furthermore, it is the custom in Europe to consume much more sausage and similarly prepared foods which offer an increased opportunity for infection due to handling and the absence of adequate methods of preservation.

For these reasons the report of the careful bacteriological examination of commercial canned goods made by Dr. John Weinzirl, working in the Department of Preventive Medicine and Hygiene of the Harvard Medical School, which was published in the January number of the *Journal of Medical Research*, is of particular interest. Weinzirl bases his conclusions upon a bacteriological examination of 1,018 cans of food. In not one of these cans, even in the obviously spoiled, did he find pathogenic organisms. A

certain percentage of the cans, purchased in the open markets, contained viable spores, all of which belonged to the harmless types of hardy bacteria quite commonly found in water and milk. In addition he shows that these spores are unable to develop in the absence of oxygen. This is equivalent to saying that commercial canned foods, even though they contain viable bacterial spores, are not the cause of poisoning when consumed, owing to the fact that the absence of oxygen has prevented active bacterial growth in the cans. Thus, he emphasizes again, after a long period during which it was more or less discredited, the importance to the preservation of foods, under the present methods of processing, of the maintenance of a vacuum in the can. The yeasts being facultative anaërobes, he finds, can readily multiply if the cans are underprocessed and are thus a cause of fermentation and swelling, but the vacuum serves as a potent factor in preventing the development of aërobic organisms. He reports also, in commercial canned foods, his failure to find organisms usually incriminated in the various types of food poisoning such as *B. botulinus* on the one hand or *B. paratyphosus* and *B. enteritidis* on the other. It would seem that large scale production with its standardized methods overcomes the difficulties of sterilization sometimes encountered in home canning and preserving. From Weinzirl's observations we are justified in concluding that canned goods as purchased in the markets today, are not a source of food poisoning.

ARCHITECTS AND EXPERTS NEEDED IN PUBLIC HEALTH.

On both sides of the ocean at the same time the same thought has actuated two foremost public spirited bodies. At Cannes, the Red Cross Conference recommended the employment of architects and engineers skilled in the specialities under consideration, as advisers to the Red Cross national organizations; in this country the National Education Association through its Committee on Standardization has issued a similar suggestion with reference to school house planning.

In the paper presented at the Milwaukee meeting of the N. E. A. the chairman of the committee called attention to the fact that, "In spite of the work of engineers and the medical profession, backed by the human interest of parents, progress in right sanitation [in schoolhouses] has been exceedingly slow throughout the country." There are in fact only five states in the Union in which legislation concerns itself with the number of water closets per hundred of pupils, and one state only of these, has space requirements. Even in the attempt to regulate this elementary feature of sanitation, there is no standardization; no real common sense. For example some of the states require one and one-half times as many fixtures as do other states. This is not an unusual feature, for the space requirements of class rooms even, are widely different in different states. Every question pertaining to schoolhouse construction has been left, one may judge, to the mercy of the state legislatures which have passed their school building laws in apparent ignorance that others have worked at the same problems, or of local school authorities who have followed the vagaries of their own notions.

Some of the outcomes of such a policy are best represented by a broad view of the effects of the laws on school building construction. The splendid and serviceable school buildings of Rochester, N. Y., which are admired by visitors and praised by those who use them, would be legally unfit for school use in some other states. Out of this chaos the N. E. A. is trying to lead the way to some formulation of fundamental principles that shall have a valid scientific basis. For this purpose it has established a strong committee now engaged in analyzing existing conditions. This analysis touches sanitation as well as construction.

One would imagine that the sanitation of schoolhouses would have rested by this time on some secure foundation, with all the attention that has been given to the subject. It is nevertheless true that standardization is absent everywhere. In ratio of toilet accommodations to pupils there is wide range; in illumination, numbers of rooms have been found in which the desks distant from the windows have far less than the accepted minimum of lighting. In heating and ventilation the survey shows that

there is wide variation in the provision for different structures. It is only fair to say, here, however, that some of this is due to varying systems—some would be harsh enough to term it, laxity—of inspection, for in states that have copied the laws from others, the effective heating and ventilation are widely different.

Even in most evident matters, the schoolhouse as it exists, does not conform to plain common sense. For example, more than one eighth of the 122 modern school buildings whose space distribution has been analyzed by the N. E. A. Committee, make no provision for a special room for women teachers. Despite the place of the school physician in modern school life, and in modern public health administration, only 18 of these schools assign a special room for his use. This is, of course, absurd in view of the important health movements that center about the schoolhouse.

In the large work of town planning or improvement, the Red Cross Conference is beginning at the right end and seeks to avoid difficulties by advising the employment of consulting architects and engineers with their special knowledge, while the Chairman of the N. E. A. Committee on Standardization of Schoolhouses seeks the avoidance in the future of the confusion now prevalent, by publicly advising communities to avail themselves of the good offices of architects who are specialists in schoolhouse planning. Both are steps in the right direction.

TWO NEW PUBLIC HEALTH MAGAZINES.

Within the past few months, two new periodicals have appeared which will be of interest to the public health profession.

The *Journal of Industrial Hygiene* will be devoted to the more technical phases of the field of industrial hygiene. It is published in Boston, Mass., under a subsidy by public spirited manufacturers of New England. The editor is David L. Edsall of the Harvard Medical School. He has gathered about him an unusually able editorial staff.

Modern Medicine hails from Chicago and is published by the same firm which issues the attractive *Modern Hospital*. This new comer takes for its field the application of medicine and allied science to industrial efficiency and to national health. Its managing editor is John A. Lapp, Ph. B., well known through his previous editorial connections with prominent periodicals. He is likewise assisted by an able corps of editors.

The American Journal of Public Health welcomes both these publications most heartily and prophesies for them a useful and successful future.

WHY THE WORK GOES SLOWLY.

A communication from Dr. A. J. Lanza, medical officer in charge of the office of Industrial Hygiene and Medicine, has been received to the effect, that the appropriation the present year for industrial hygiene work is only about one-fourth as much as it was last year, and this is the beginning and the end of an explanation why the work is not being carried along the lines suggested in the paper by Dr. C. B. Selby in the July Journal.

The A. P. H. A. is indebted to Mrs. C. S. Caverly for the gift of a set of the Journal, the library set of her late husband, Dr. Caverly, former president of the Vermont State Board of Health.

ASSOCIATION NEWS

HEALTH EMPLOYMENT BUREAU.

In order to help relieve the shortage of sanitarians, free help-wanted announcements will be carried in this column until further notice. Copy goes to the printer on the fifteenth of each month. In answering keyed advertisements, please mail replies separately.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Positions wanted and help wanted advertisements are also carried on XXIX of the Advertising Section.

Wanted: Social worker for the Grenfell Mission, Labrador. Some district nursing, some one with hospital training, or some one who is a graduate nurse. Canadian preferred. Address M. R. W., 263, care of this JOURNAL.

Wanted: Male laboratory technician, in hospital in Chicago. Experienced in Wassermann, dark field illumination and general hospital routine; $100 a month, room free, board and laundry. Address L. A., 286, care of this JOURNAL.

Wanted: Well-trained nurse for work in schools of Danville, Va., salary $90–$100 per mo., according to qualifications. Address G. W. R., 287, care of this JOURNAL.

Trained medical men with experience in public health work are invited to take the examination for District Health Officer or for Epidemiologist of the Massachusetts Department of Health. For details apply to Eugene R. Kelley, M. D., State Commissioner of Health, State House, Boston, Mass.

Wanted by the Y. M. C. A., a health lecturer for work in Russia. For particulars address R. M. Story, International Committee of Y. M. C. A., No. 347 Madison avenue, New York, N. Y.

INFLUENZA STATISTICS COMMITTEE.

This Committee is to consider the mathematical analysis of the data assembled.

During the latter part of September the Pathometry Subcommittee of the Vital Statistics Section Committee on Statistical Study of the Influenza Epidemic will meet at Columbia University, New York City. The subcommittee will take up matters of mathematically testing, graduating and of logically interpreting the data published by registration offices. Suggestions on these matters are invited, and these suggestions should be addressed to Mr. Arne Fisher, Recorder, Subcommittee on Pathometry, care of Statistician's Department, Prudential Insurance Company, Newark, N. J.

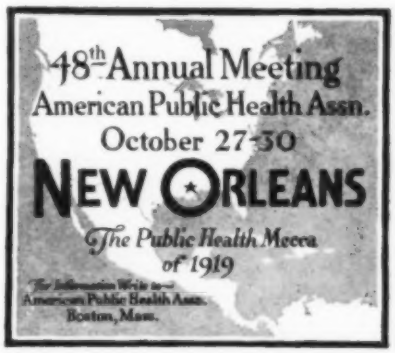
Professor Charles C. Grove, Department of Mathematics, Columbia University, is chairman of this subcommittee. Offers of coöperation in the work of the subcommittee have been received from Professor James W. Glover, University of Michigan; Professor Raymond Pearl, Johns Hopkins University; Dr. Wm. H. Davis, Chief Statistician for Vital Statistics, Bureau of the Census, and others.

MEMBERSHIPS.

The interest awakened in the Association in getting new names on the list of members is still active as is evidenced by the fact that the number added to the rolls between the sending of President Frankel's first letter and August 27 is 1108. The new names are from practically every section of the country, as will be seen by an inspection of the list, which now includes some from the Philippines and one from the far Northwest, in Saskatchewan.

THE NEW ORLEANS "STICKER."

So that members may let their friends know that the A. P. H. A. is a living organism and is moving vigorously in the direction of its New Orleans Convention, this attractive "sticker" has been prepared for the use of health officers, health officials and the general membership of the Association. It presents the extended territory from which the Association draws its members, and in the two-colored design, the blue of the ocean will define and set off



the continent, in which New Orleans is the bright, particular central star in the constellation. One can see how well it is placed for a convention city of this distribution of professional men. Indications are that the Crescent City will indeed be the "Public Health Mecca" in October, and a glance at the preliminary program in this issue of the JOURNAL,

pages 698–709, will be sufficient to explain the reason.

Members who are going to New Orleans, may well attract the attention of their friends to what "is doing" by affixing the "stickers" to their correspondence, while those whose business engagements will deter them from going, may well perform missionary service by bringing the meeting to the attention of their friends who may perhaps be able to attend.

The "sticker" will be furnished in any desired quantity on application to the Secretary, A. P. H. A., No. 169 Massachusetts avenue, Boston, Mass. Send in your orders early, whether for one or a thousand, so that you may begin their use without losing a moment.

CHILD HYGIENE ASSOCIATION MEETING

The members of the American Public Health Association are invited to attend the annual meeting of the American Child Hygiene Association (formerly the American Association for Study and Prevention of Infant Mortality) at Asheville, N. C., November 11–13, 1919.

The meeting will be held concurrently with that of the Southern Medical Association, and members and others interested are especially urged to reach Asheville on Monday, November 10, so that they may take part in the meetings of the Pediatric Section of the Southern Medical Association.

For information about the meeting address the Executive Secretary of the Association, 1211 Cathedral street, Baltimore, Md.

LIST OF NEW MEMBERS

PROPOSED FOR ELECTION TO THE

A. P. H. A.

FROM JULY 21 TO AUGUST 21, 1919.

Sponsors —and—	The New Members Whom They Introduced
(States arranged in alphabetical order)	
N. A. DUBOIS, Fort Payne, Ala.	MISS JEWELL J. SMITH, Trained Nurse, Fort Payne, Ala.
WM. C. HASSLER, M. D., San Francisco, Cal.	ADDISON PAIGE, Hospital Steward, Represa, Cal.
MISS RUTH F. HOREL, Eureka, Cal.	MISS IDA MAY STEVENS, Chief Bacteriologist, Berkeley, Cal.
T. E. REEKS, M. D., Hartford, Conn.	E. S. FAIRCHILD, Bridgeport, Conn.
	E. A. MARKHAM, M. D., Health Officer, Durham, Conn.
	M. W. PLUMSTEAD, M. D., Health Officer, Haddam, Conn.
	W. J. TRACEY, M. D., Health Officer, Norwalk, Conn.
	FRANK E. POTTER, M. D., Health Officer, Portland, Conn.
	E. H. SMITH, M. D., Health Officer, Redding, Conn.
	M. J. BROOKS, M. D., Health Officer, New Canaan, Conn.
	W. H. TIERNAN, M. D., Health Officer, Sandy Hook, Conn.
	LEROY A. SMITH, Health Officer, Higganum, Conn.
	G. F. LEWIS, M. D., Health Officer, Stratford, Conn.
	H. FRANK MOORE, M. D., Health Officer, Bethel, Conn.
	A. M. HECK, Health Officer, Stafford Springs, Conn.
R. G. HOSKINS, Major, Washington, D. C.	FOREST H. SWEET, Chemist, Battle Creek, Mich.
C. C. PIERCE, Asst. Surg. Gen., Washington, D. C.	RUSSELL A. JEWITT, M. D., Consultant, U. S. P. H. S.
BERTHA JOHNSON, M. D., Washington, D. C.	W. BYRON PARKER, M. D., U. S. P. H. S., Smithville, Tenn.
B. L. ARMS, M. D., Jacksonville, Fla.	J. W. DE MILLY, State Veterinarian, Tallahassee, Fla.
GEO. W. SIMMONS, Jr., Jacksonville, Fla.	HON. JOE L. EARMAN, State Health Commissioner, West Palm Beach, Fla.

JOHN A. KAPPELMAN, M. D., Springfield, Ill.

C. ST. CLAIR DRAKE, M. D., Springfield, Ill.

W. A. EVANS, M. D., Chicago, Ill.

ABEL WOLMAN, Baltimore, Md.

B. J. NEWMAN, Glen Echo, Md.

CLARENCE D. HART, W. Somerville, Mass.

MISS MARGUERITE BOND, Cambridge, Mass.

MISS NORMA K. BURRELL, Lansing, Mich.

WILLIAM F. COGSWELL, M. D., Helena, Mont.

WILLIAM F. COGSWELL, M. D.,
and
JOHN J. SIPPY, M. D., Helena, Mont.

JAMES A. TOBEY, East Orange, N. J.

J. J. CRAVEN, M. D., Jersey City, N. J.

J. H. CARSON, New York City

S. M. HEULINGS, New York City

EDWARD CLARK, M. D., Buffalo, N. Y.

FRANK W. LAIDLAW, Hurleyville, N. Y.

WILLIAM LEVIN, Albany, N. Y.

W. B. PAULSON, Raleigh, N. C.

OSKAR KLOTZ, M. D., Pittsburgh, Pa.

E. S. ALLEN, M. D., Arcola, Ill.

R. H. BELL, M. D., Carlinville, Ill.

M. W. BISSON, M. D., Health Officer, Charleston, Ill.

A. H. BRITTIN, M. D., Auburn, Ill.

X. B. DOUGHERTY, M. D., Health Officer, Sigel, Ill.

HARRY HUECK, M. D., Sigel, Ill.

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J. M. LITTLE, M. D., Pana, Ill.

THOMAS J. BROPHY, State Quarantine Officer, Danville, Ill.

WM. O. KROHN, M. D., Chicago, Ill.

BESS SINDLER, Research Assistant, 201 S. Broadway, Baltimore, Md.

(MRS.) LAURIE JEAN REID, R. N., Chief Nurse, Officer of Industrial Hygiene, Washington, D. C.

EDGAR Q. BULLOCK, M. D., State Health Board Member, Wilmington, Del.

MISS LORETTA M. DAKIN, Bacteriologist, Cambridge, Mass.

MISS JESSIE ALICE GODFREY, Laboratory Technician, Lansing, Mich.

JOHN J. SIPPY, M. D., State Epidemiologist, Helena, Mont.

DAVID A. BAKER, M. D., Jordan, Mont.

M. G. DANSKIN, M. D., Health Officer, Glendine, Mont.

G. A. FUSON, M. D., Kalispell, Mont.

JOHN C. HAGAN, M. D., Health Officer, Hysham, Mont.

H. G. HARRIS, M. D., Poplar, Mont.

D. W. H. McKAY, M. D., White Sulphur Springs, Mont.

JOHN PAUL RITCHEY, M. D., Health Officer, Masonic Temple, Missoula, Mont.

SAMUEL KELLY CAMPBELL, M. D., Health Officer, Harlowton, Mont.

J. C. DeWANE, M. D., Wolf Point, Mont.

A. C. SPOONER, M. D., Health Officer, Bainville, Mont.

DAVID E. BUCKLEY, West Orange, N. J.

WALTER R. BRYCE-DELANEY, Sanitary Engineer, Jersey City, N. J.

MINER C. HILL, M. D., New York City

ANNA R. KAY, R. N., Haddonfield, N. J.

CARRO C. CROFF, M. D., Health Lecturer, Buffalo, N. Y.

B. ELEANOR EASTON, Bacteriologist, Kingston, N. Y.

RUFUS B. CRAIN, M. D., Albany, N. Y.

BEATRICE M. BURRELL, Albany, N. Y.

A. J. WARREN, Assistant State Health Officer, Raleigh, N. C.

GROVER C. WEIL, M. D., Mercy Hospital, Pittsburgh, Pa.

I. M. CASHELL, M. D., Providence, R. I.

OSCAR DAVIS, M. D., Austin, Tex.

HARRY LYTLE, Saskatoon (Pres. Saskn. Branch, Sanitary Inspectors Assoc. of Western Canada)

VINCENTE DE JESUS, M. D., Manila, Philippine Islands

EUGENIO HERNANDO, M. D., Manila, P. I.

ELIZABETH M. GARDINER, M. D., Director, Child Welfare, Providence, R. I.

RAYMOND J. UPTON, Sanitary Engineer, Austin, Texas.

ALFRED J. BOLUS, Sanitary Inspector, Weyburn, Saskn., Canada.

FELIPE ARENAS, M. D., Public Health Doctor, Misericordia, P. I.

MANUEL LLORA, M. D., Medical Officer, Manila, P. I.

ANDRES CATANJAL, M. D., Health Officer, Iloilo, P. I.

MANUEL GOMEZ Y MARTINEZ, M. D., Manila, P. I.

JOSÉ AVELLANA BASA, M. D., Health Officer, Tondo, Manila, P. I.

LUIS CABALLERO, M. D., Health Officer, Pasig, Rézal, P. I.

PACIFICO LAYGO, M. D., Medical Inspector, Manila, P. I.

Names of Proposed Members Whose Sponsors Are Not Known

ORVILLE BALDWIN HUNT, Berkeley, Cal.

SIRAGAN H. EZEKIELIAN, Bacterologist, Palo Alto, Cal.

DANIEL CROSBY, M. D., Health Officer, Oakland, Cal.

DENVER FIRE CLAY CO. (ED. F. HICKISH), Denver, Col.

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WM. HOSKINS, Jr., Chemist, La Grange, Ill.

W. E. RICE, M. D., Health Officer, Tuscola, Ill.

C. VAN SCHAACK, Director, Biochemical Laboratory, Hammond, Ind.

THERON N. GRETZER, Indianapolis, Ind.

MRS. FRANCIS KING CASEY, Woman's Civic League, Baltimore, Md.

ROY S. DEARSTYNE, Bacteriologist, Takoma Park, Md.

MRS. WM. E. McNAMARA, Service Director, Sharp Mfg. Co., Boston, Mass.

WILLIAM A. TURNER, Ph. D., Teacher, Housatonic, Mass.

EDITH L. SOULE, R. N., Supervisor, District Nursing Ass'n, Hyannis, Mass.

FRANCIS H. KINGSBURY, Medfield, Mass.

MISS MARY A. KLEIN, Roslindale, Mass.

JUSTUS GOSLAN, Cedar Grove, N. J.

ARTHUR C. M. HERDLING, Pathologist, Orange, N. J.

J. HOLMES SMITH, Jr., U. S. P. H. S., Trenton, N. J.

FERCY L. De NYSE, M. D., Pathologist, Brooklyn, N. Y.

GUSTAVE HORSTMAN, M. D., City Pathologist, Mount Vernon, N. Y.

H. E. MILLER, C. E., Health Officer, Raleigh, N. C.

C. A. HAYWORTH, M. D., County Physician, Coleridge, N. C.

H. R. EGGLESTON, B. S., M. A., Prof. of Bact. & pre-medical Biology, Marietta College, Marietta, Ohio

BRUCE SNODGRASS, M. D., Beaver Falls, Pa.

VIRGINIA HAWKINS, Director of an Industrial Health Dept., Hazleton, Pa.

W. L. STEEN, M. D., Health Officer, New Castle, Pa.

M. H. JACOBS, Ph. D., Teacher, Philadelphia, Pa.

J. C. REIFSNYDER, M. D., Scranton, Pa.

JOSEPH SCATTERGOOD, M. D., Westchester, Pa.

CHAS. C. SELLERS, Memphis, Tenn.

HERMAN A. NESTER, Analytical Chemist, San Antonio, Texas

L. R. THOMPSON, Chief Quarantine Officer, Philippine Islands

JOHN JOSEPH HEAGERTY, M. D., Bacteriologist, Grosse Isle, Quebec

G. E. MARTINEAU, M. D., Grosse Isle Co., Montmagny, Quebec

JUDSON V. GRAHAM, 351 Brunswick St., Halifax, N. S.

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You can kill two birds with one stone!
Get your new member and bring him to New Orleans!
October 27-30, 1919.

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Publicity Committee.

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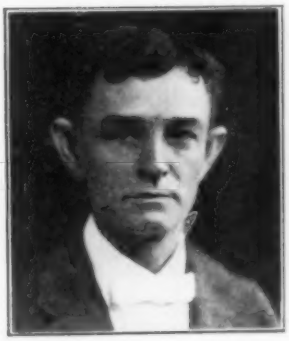

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THESE WELL-KNOWN HEALTH ADMINISTRATORS ARE THE MEMBERS OF THE EXECUTIVE COMMITTEE WHICH SPELLS SUCCESS FOR THE NEW ORLEANS MEETING.

NEW ORLEANS HOTELS.

	Capacity in Rooms.		With Private Bath.	Without Bath.
GRUNEWALD, Association Headquarters,	600	single	$3.00 up	$1.50 up
University Place, near Canal St.,		double	4.00 up	2.00 up
ST. CHARLES,	800	single	2.50 up	2.00 up
St. Charles St. and Common,		double	4.00 up	3.00 up
HOTEL DE SOTO,	150	single	none	none
Poydras St. and Baronne,		double	6.00	4.00
PLANTERS,	30	single	2.50	1.50
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LAFAYETTE,	40	single	2.50	1.50
Dauphine St. and Iberville,		double	3.00	2.50
MONTELEONE	150	single	3.00 up	2.00 up
Royal St. and Iberville,		double	4.00 up	3.00 up

All hotels are equipped with hall baths.

The chairman of the Committee on Hotels and Accommodation is J. J. Wymer, M. D., Acting Medical Supervisor of Public Schools, New Orleans, La., to whom inquiries may be addressed.

WHAT NEW ORLEANS IS OFFERING.

When in 1825 the Duke of Saxe-Weimar visited New Orleans he found a very attractive city. It was quite another world from that in which he had been traveling. "Plantations with handsome buildings followed in quick succession," he wrote, "noble live oaks, orange trees, mansions with columns, piazzas and covered galleries. . . . We saw from a distance the white spires of the cathedral and the masts in port. The road lay between well-built mansions; over the streets were hung reflecting lamps." The New Orleans of the twentieth century is no whit less attractive.

The JOURNAL may be pardoned if it turns aside from the technicalities of public health to note to its readers some of the impressions of this beautiful Southern city, chosen for the Forty-Seventh Annual Convention. It is a city with history and beauty. The former teems with rare romance, and a touch of European mediævalism found in no other place in America; with an individuality all its own, and a striking architecture, suggestive of tropical climes that impresses itself on the visitor.

New Orleans has alluring qualities not to be observed in any other city in this country. It is charmingly cosmopolitan, the city of good health, good spirits and withal, with business aggressiveness. It lies near the mouth of the Mississippi, at the head of the Gulf of Mexico and is the gateway between a vast interior country and the ports of the world. An ideal fall and winter resort, New Orleans blends the charm of antiquity with the strength of today. The eye catches on the one hand the sequestered courtyard, the token of the quiet family life, characteristic of the city, and on the other the modern warehouses proudly boasting the latest construction and most efficient modes of business. What many different places set forth as their own prime attraction, this city gathers together into one alluring whole, its tenacious hold on the past, its delightful climate, the quaint French quarter, the river front, and not least the charming social qualities of the people; these make it truly a Mecca for thousands of sightseers each season.

It is a sudden transition from such a simple picture as the paved court to the splendid marble stairway of the Grunewald, worthy of a palace of Europe, leading from the entrance floor below to the sociable foyer, which will be the real headquarters of the Association for the gossipy interchange of thought and experience that helps make these conventions worth while. Chairs are here scattered in intimate groups in the broad corridor and about its marble balustrade, and under the soft illumination of the roof of glass and amid florid decorations of potted plants and greenery, the hardships of life become a dream.

This is the New Orleans in which the Association invites its members to gather, and at a time when the shadow of war will permit the relaxing of serious thought; a city which in addition to its picturesque features is itself an example of good health administration.

(TENTATIVE.)

PROGRAMS OF THE FORTY-SEVENTH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

New Orleans, La., October 27–30, 1919.

The following programs are preliminary. Final programs, giving dates of sessions will be published in the JOURNAL appearing October 7, or will be mailed to members of the Association.

Speakers will be notified about September 15 of dates of sessions.

Correspondence for each Section should be addressed to the program chairman for that Section.

Special programs will be presented on Personal Hygiene and Child Hygiene. The incomplete Personal Hygiene program is given in this issue. The Child Hygiene program will be announced later. The program chairman is Dr. Julius Levy, Director, Child Hygiene Division, Department of Health, Newark, N. J.

(TENTATIVE.)

PROGRAM OF THE GENERAL SESSIONS.

President, LEE K. FRANKEL, PH. D., *New York City.*
Vice-President, J. W. S. MCCULLOUGH, *Lieut.-Col.*, C. A. M. C., *Toronto, Ont.*
Secretary, A. W. HEDRICH, *Boston, Mass.*

Address correspondence to the Secretary at 169 Massachusetts Avenue, Boston, Mass.

The number of papers upon the general sessions program is necessarily restricted as the sessions, coming in the evening, are relatively short. Furthermore, it is desired this year to allow a maximum amount of time for general discussion.

Addresses of Welcome by the Governor of Louisiana and the Mayor of New Orleans.

ADDRESS. LEE K. FRANKEL, PH. D., *President, American Public Health Association.*

Historical Development of Public Health Work in England. SIR ARTHUR NEWSHOLME, K. C. B.

Reception to members and guests.

Symposium on Malaria.

Cure of Infected Persons as a Factor in Malaria Control. C. C. BASS, M. D., *Professor of Experimental Medicine, Tulane Medical College, New Orleans, La.*

DISCUSSION: Opened by W. S. LEATHERS, M. D., *State Health Officer, Jackson, Miss.*

Drainage as an Anti-Malarial Measure. J. A. LE PRINCE, *Senior Sanitary Engineer, U. S. P. H. S., Memphis, Tenn.*

Mosquito Work of the Bureau of Entomology: Other Insects from the Health Point of View. CAPT. D. L. VAN DINE (late U. S. A.), *Expert, Bureau of Entomology, U. S. Department of Agriculture, Mound, La.*

DISCUSSION: Opened by L. O. HOWARD, *Chief of Bureau of Entomology, Washington, D. C.*

Résumé: Methods, Costs, Results.

H. R. CARTER, *Assistant Surgeon General, U. S. P. H. S., Baltimore, Md.*

MAJOR GENERAL W. C. GORGAS, *U. S. A., Retired, Director of Yellow Fever Control, International Health Board, Panama.*

WICKLIFFE ROSE, PH. D., *General Director, International Health Board, New York City.*

J. A. FERRELL, M. D., *Director for the United States, International Health Board, New York City.*

Symposium on Influenza.

The Influenza Epidemic. Speaker to be announced.

Administrative Measures against Influenza. ALLEN W. FREEMAN, *State Commissioner of Health, Columbus, Ohio.*

What Medical Examination of Influenza Patients Has Shown in Cincinnati, Ohio. (Speaker to be announced.)

DISCUSSION: Opened by D. B. ARMSTRONG, M. D., *Executive Officer, Community Health Demonstration, Framingham, Mass.*

Reports of subcommittees on influenza.

Discussion of the Influenza Situation. Opened by W. C. WOODWARD, M. D., *Health Commissioner, Boston, Mass.*

Final reports or résumés on influenza.

Report of Committee on State Health Societies. W. A. EVANS, M. D., *Chairman, Chicago, Ill.*

Other committee reports.

Installation of new officers.

(TENTATIVE.)

PROGRAM OF THE SECTION ON PUBLIC HEALTH ADMINISTRATION.

Chairman, MR. CHESTER H. WELLS, *Wilmington, Del.*
Vice-Chairman, T. D. TUTTLE, M. D., *Seattle, Wash.*
Secretary, WM. F. COGSWELL, M. D., *Helena, Mont.*

Correspondence concerning this Section is to be addressed to the program chairman, Mr. C. H. Wells, State Health Department., Wilmington, Del.

Symposium: The Privy as a Public Health Problem. L. L. LUMSDEN, *Assistant Surgeon General, U. S. Public Health Service, Washington, D. C.*

The Rôle of the Privy in the Control of Typhoid Fever. * *

The Rôle of the Privy in the Control of Hookworm Disease. * *

The Rôle of the Privy in the Control of Infant Mortality. E. C. LEVY, M. D., *Director of Public Welfare, Richmond, Va.*

The Importance of Rural Education Work in the Control of the Privy Nuisance. * *

Practical Types of Sanitary Privies, with Exhibits. * *

Rural Sanitation, the Key to Disease Prevention in the South. WILLIAM S. KEISTER, M. D., *State Director of Sanitation, Montgomery, Ala.*

Hookworm Infection in Florida. B. L. ARMS, M. D., *Director, Bureau of Diagnostic Laboratories, State Board of Health, Jacksonville, Fla.*

Occurrence of Typhoid Fever After the Use of Bacterins. GEORGE A. SOPER, *Major, Surgeon General's Office, U. S. Army, Washington, D. C.*

* *Speaker to be announced later.

The State, the Municipality and the Private Tuberculosis Association in the Control of Tuberculosis. DONALD B. ARMSTRONG, M. D., *Executive Officer, Community Health Demonstration; National Tuberculosis Association, Framingham, Mass.*

DISCUSSION: FREDERICK D. HOPKINS, *Field Secretary, National Tuberculosis Association,* 381 Fourth Avenue, New York City.

Venereal Disease Control: Methods, Obstacles and Results. C. C. PIERCE, *Assistant Surgeon General, U. S. Public Health Service, Washington, D. C.*

DISCUSSION: ALLEN W. FREEMAN, M. D., *State Commissioner of Health, Columbus, Ohio,* and MATTHIAS NICOLL, JR., M. D., *Deputy Commissioner of Health, Albany, N. Y.*

Symposium: Public Health Administration.

Overcoming Difficulties in Measuring Efficiency and Justifying Appropriations for Public Health Work. ERNST C. MEYER, *Director of Surveys and Exhibits, International Health Board, 61 Broadway, New York City.*

DISCUSSION: CARL E. MCCOMBS, M. D., *Bureau of Municipal Research, New York City,* and CHARLES J. HASTINGS, M. D., *Medical Officer of Health, Department of Public Health, Toronto, Can.*

Relative Values in Public Health Work. * *

DISCUSSION: MAYO TOLMAN, *Chief, Division Sanitary Engineering, State Department of Health, Charleston, W. Va.,* and CHARLES V. CHAPIN, M. D., *Health Officer, Providence, R. I.*

Relative Functions of State and Local Health Departments. CARL E. MCCOMBS, M. D., *Bureau of Municipal Research, New York City.*

Types of Public Health Work for Cities of Various Sizes. LAWRENCE VEILLER, *National Housing Association, New York City.*

How to Organize Your City for Public Health. * *

DISCUSSION: CHARLES T. NESBITT, M. D., *Health Officer, Akron, Ohio.*

Health Budgets and Financial Accounts. * *

The State Health Society: Its Purpose, Organization and Usefulness. W. A. EVANS, M. D., *Health Department, Chicago Tribune, Chicago, Ill.*

DISCUSSION: E. R. KELLEY, M. D., *Commissioner of Health, State Department of Health, Boston, Mass.*

Accomplishments of Public Health. S. J. CRUMBINE, M. D., *Secretary, State Board of Health, Topeka, Kan.*

Causes of Army Rejections and What the Health Officer Can Do to Remedy Conditions. V. C. VAUGHAN, M. D., *University of Michigan, Ann Arbor, Mich.*

DISCUSSION: W. C. WOODWARD, M. D., *Health Commissioner, Boston, Mass.*

What Should Be Done in the Control of Degenerative Diseases? B. E. WASHBURN, M. D., *County Health Supervisor, Raleigh, N. C.*

DISCUSSION: F. S. CRUM, *Assistant Statistician, Prudential Life Insurance Company, Newark, N. J.,* and M. M. SMITH, M. D., *Managing Editor, Medical Insurance and Health Conservation, Dallas, Tex.*

Round Table Discussion:

How to Obtain Adequate Appropriations for Public Health.

HENRY F. VAUGHAN, *D. P. H., Health Officer, Detroit, Mich.*

E. C. LEVY, M. D., *Director of Public Welfare, Richmond, Va.*

* *Speaker to be announced later.

What Can We Do to Bring About Reasonable Compensation for Health Officers.

HERMANN BIGGS, M. D., *Commissioner of Health, State Department of Health, 25 West 45th St., New York City.*

ALLEN W. FREEMAN, M. D., *State Commissioner of Health, Columbus, Ohio.*

OSCAR DOWLING, M. D., *State Commissioner of Health, New Orleans, La.*

F. M. MEADER, M. D., *Director, Division of Communicable Diseases, State Department of Health, Albany, N. Y.*

Experiences of Health Officials in Obtaining Appropriations.

CHARLES SAVILLE, *Acting Secretary, Chamber of Commerce and Manufacturers' Association, Dallas, Tex.*

W. H. KELLOGG, M. D., *Secretary, California State Board of Health, Sacramento, Cal.*

CHARLES J. HASTINGS, M. D., *Medical Officer of Health, Department of Public Health, Toronto, Can.*

MAX COLTON, *Health Officer, Cumberland, Md.*

CHARLES V. CRASTER, M. D., *Health Officer, Newark, N. J.*

J. M. FURSTMAN, M. D., *Health Director, Department of Health and Safety, Bloomington, Ill.*

Preventive Medicine in War. MAZYCK P. RAVENEL, M. D., *University of Missouri, Columbia, Mo.*

DISCUSSION: CHARLES J. HASTINGS, M. D., *Medical Officer of Health, Department of Public Health, Toronto, Can.*

Public Health Perspective. L. L. LUMSDEN, *Assistant Surgeon General, U. S. Public Health Service, Washington, D. C.*

City Health Bulletins: Their Use and Misuse, and Necessity for Additional Mailing Privileges. MAX J. COLTON, *Health Officer, Cumberland, Md.*

Committee reports (10 minutes each).

(TENTATIVE.)

PROGRAM OF THE LABORATORY SECTION.

Chairman, R. B. FITZ-RANDOLPH, M. D., *Trenton, N. J.*
Vice-Chairman, A. B. WADSWORTH, M. D., *Albany, N. Y.*
Secretary, W. G. BISSELL, M. D., *Buffalo, N. Y.*

Correspondence concerning this Section should be addressed to the program chairman, Dr. Wadsworth, 278 Yates St., Albany, N. Y.

A Comparison of Stains for Diphtheria Bacilli. HENRY ALBERT, M. D., *Department of Pathology and Bacteriology, State University of Iowa.*

Some of the Factors Influencing the Potency of Biological Products. JOHN F. ANDERSON, M. D., *New Brunswick, N. J.*

The Preparation of Old Tuberculin. BENJAMIN WHITE, M. D.

The Value of Brilliant Green in Eliminating Errors Due to the Anaërobes in the Presumptive Test for B. Coli. THEODORE C. MUER, and ROBERT L. HARRIS, *Bacteriologists, Mt. Prospect Laboratory, Brooklyn, N. Y.*

Studies in the Clarification of Milk. PROF. CHARLES E. MARSHAL, *Department of Microbiology, Massachusetts Agricultural College, Amherst, Mass.*

The Test of a New Water Supply for the American Troops at Brest. PROF. EDWARD BARTOW, *University of Illinois, Chicago, Ill.*

(Subject to be supplied later.) A. PARKER HITCHENS, M. D.

Endemic Sprue in the Southern United States. MARK F. BOYD, M. D., *Laboratory of Bacteriology and Preventive Medicine, University of Texas.*

The Biology of the Pfeiffer Bacillus. PROF. E. O. JORDAN, *Department of Hygiene and Bacteriology, The University of Chicago, Chicago, Ill.*

Some Observations on the Presence of Trichomonas Hominis in the Intestinal Tract. W. D. STOVALL, M. D., *Director, Wisconsin State Laboratory.*

The Potency of Polyvalent Antimeningococcus Serum as Determined by the Agglutination Titre: The Potency of Serum Produced with Four Representative Strains as Compared with Serum Produced with Fifty Strains. A. B. WADSWORTH, M. D., *Director, The Division of Laboratories and Research, New York State Department of Health, Albany, N. Y.*

A Study of the Bacillus Influenzae of Pfeiffer. A. B. WADSWORTH, M. D., *Director, The Division of Laboratories and Research, New York State Department of Health, Albany, N. Y.*

A Study of the Classification of the Meningococci. A. B. WADSWORTH, M. D., *Director;* RUTH GILBERT and ALICE HUTTON, *Division of Laboratories and Research, New York State Department of Health, Albany, N. Y.*

Reports of the following committees:

Committee of Standard Methods for the Bacteriological Examination of Milk. W. H. PARK, M. D., *Chairman.*

Committee of Standard Methods for Preparing Tuberculin and Mallein. (Tentative.) A. P. HITCHENS, M. D., *Chairman.*

Committee on Standard Methods for Standardization of Disinfectants. (Tentative.) PROF. E. B. PHELPS, *Chairman.*

Committee of Standard Methods for the Bacteriological Examination of Shell Fish. P. D. PARSONS, *Chairman.*

Committee of Standard Methods for the Examination of Air. PROF. C.-E. A. WINSLOW, *Chairman.*

Committee on Standard Methods of Bacterial Examination of Water and Sewage. PROF. E. P. GORHAM, *Chairman.*

Committee on Standard Methods for Chemical Examination of Water and Sewage. PROF. EDWARD BARTOW, *Chairman.* PROF. E. B. PHELPS to act for PROF. BARTOW.

Committee on Standard Methods of Analysis of Miscellaneous Food Products. (Tentative.) L. A. ROUND, *Chairman.*

Committee on Standard Methods for the Preparation and Standardization of Anti-Meningococcus Serum. (Tentative.) C. KRUMWIEDE, M. D., *Chairman.*

Committee on Influenza (new). W. H. PARK, M. D., *Chairman.*

Committee on Standard Methods of Preparing Diphtheria Antitoxin. (Tentative.) P. G. HEINEMANN, M. D., *Chairman.*

(TENTATIVE.)

PROGRAM OF THE SOCIOLOGICAL SECTION.

Chairman, LOUIS I. HARRIS, M. D., *New York City.*
Vice-Chairman, IRA S. WILE, M. D., *New York City.*
Secretary, WALTER H. BROWN, M. D., *Bridgeport, Conn.*

Correspondence concerning this Section should be addressed to the program chairman, Dr. Brown, at 280 Glenwood Ave., Bridgeport, Conn.

The Relations of Living Conditions to Health.

The Family Budget and Health. ROYAL S. MEEKER, *Commissioner of Labor Statistics, Washington, D. C.*

The Sociological Aspect of Housing. IRA S. WILE, M. D., *New York City.*

The Sanitarian's Definition of a Living Wage. (Speaker to be announced.)

The Influence of Industrial Relations Upon Health.

(Proposed joint session with Industrial Hygiene Section not yet accepted.)

The Point of View of the Employer. MR. MAGNUS W. ALEXANDER, *National Industrial Conference Board, Boston, Mass.*

The Point of View of the Employee. MR. FRANK MORRISON, *American Federation of Labor, Washington, D. C.*

The Point of View of the Public Health Worker. LOUIS I. HARRIS, M. D., *Director of the Bureau of Preventable Diseases, State Department of Health, New York City.*

Symposium on Community Medicine.

The Community Use of Group Medicine. RICHARD H. CABOT, M. D., *Boston, Mass.*

Health Centers. (Speaker to be announced.)

Evaluation of the Community Unit Experiment. HAVEN EMERSON, M. D., *New York, N. Y.*

Miscellaneous.

A Study of the Social Condition of Dispensary Patients. E. H. LEWINSKI-CORWIN, PH. D., *New York City.*

The Sociological Aspect of the Hookworm. OSCAR DOWLING, M. D., *State Commissioner of Health, New Orleans, La.*

The Sociological Aspect of Pellagra. ED. J. WOOD, M. D., *Wilmington, N. C.*

(TENTATIVE.)

PROGRAM OF THE SECTION ON INDUSTRIAL HYGIENE.

Chairman, J. W. SCHERESCHEWSKY, M. D., *Washington, D. C.*
Vice-Chairman, F. D. PATTERSON, M. D., *Harrisburg, Pa.*
Secretary, A. J. LANZA, M. D., *Washington, D. C.*

Correspondence concerning the Section on Industrial Hygiene is to be addressed to the program chairman, Dr. Lanza, 805 G Street, N. W., Washington, D. C.

Address of Chairman. Need and Method of Coördinating Federal, State and Local Health Agencies in Promoting Industrial Hygiene.

A Program for Organizing and Coördinating Industrial Clinics. T. GRIER MILLER, M. D., *University of Pennsylvania, Philadelphia, Pa.*

Utilizing the Out-Patient Department for Industrial Clinic Work. WADE WRIGHT, M. D., *Massachusetts General Hospital, Boston, Mass.*

Utilizing Records of Plant Medical and Surgical Departments for Furthering Plant Hygiene. BERNARD J. NEWMAN.

Placement and Replacement of Employees on the Basis of Physical Examinations. HARRY MOCK, M. D., *Chicago.*

Classifying Employees and Increasing Production by Improving Their Physical Condition. WM. J. CURRY, M. D., *Holyoke, Mass.*

Fundamental Factors in Plant Hygiene. DON LOWE, M. D., *Akron, Ohio.*

Health Hazards of Non-Poisonous Dusts. EMERY R. HAYHURST, M. D., *University of Ohio, Columbus, Ohio.*

Health Hazards of the Dye Industry. C. E. FORD, M. D., *New York, N. Y.*

Systematic and Dermatic Effects from the Use of Cutting Oils and Compounds. H. D. PEASE, M. D., *Lederle Laboratories, New York, N. Y.*

Industrial Fatigue: Present Status of Investigations. FREDERIC S. LEE, M. D., *New York, N. Y.*

Special Health Hazards of Women Industrial Workers. LILLIAN ERSKINE.
The Insurance Company and Industrial Hygiene. AUSTIN D. REILEY, *New York.*
The Industrial Physician and Welfare Work. W. IRVING CLARK, M. D., *Worcester, Mass.*
The Part Played by Community Insanitation in the Incidence of Industrial Diseases. ROGER PERKINS, *Cleveland, O.*
Legislative Standards in the Field of Industrial Hygiene.

(TENTATIVE.)

PROGRAM OF THE SANITARY ENGINEERING SECTION.

Chairman, MR. E. A. FISHER, *Rochester, N. Y.*
Vice-Chairman, MR. PAUL HANSEN, *Springfield, Ill.*
Secretary, MR. SAMUEL A. GREELEY, *Chicago, Ill.*

Correspondence concerning the Sanitary Engineering Section is to be addressed to the program chairman, Mr. Hansen, State Board of Health, Springfield, Ill.

Report of the Committee on Water Supply. G. G. EARL, General Superintendent Sewerage and Water Board, New Orleans, La., *Chairman.* Discussion.
Report of Committee on Waterworks Operation and Analytical Methods. EDWARD MAYO TOLMAN, Director and Chief Engineer, Department of Health, Charleston, W. Va., *Chairman.* Discussion.
Report of Committee on Sanitary Control of Waterways. HARRISON P. EDDY, Consulting Engineer, Boston, Mass., *Chairman.* Discussion.
Report of Committee on Sewerage and Sewage Disposal. KENNITH ALLEN, Board of Estimate and Apportionment, New York, N. Y., *Chairman.* Discussion.
Report of Committee on Sewage Works Operation and Analytical Methods. C. B. HOOVER, Chemist-in-Charge, Division of Sewage Disposal, Columbus, Ohio, *Chairman.* Discussion.
Report of Committee on Refuse Collection and Disposal. E. D. RICH, Chief Engineer, State Board of Health, Lansing, Michigan, *Chairman.* Discussion.
Report of Committee on Milk Pasteurization. H. A. WHITTAKER, Director, Division of Sanitation, Minneapolis, Minnesota, *Chairman.* Discussion.
Report of Committee on Swimming Pools. G. W. SIMONS, JR., Chief Sanitary Engineer, State Board of Health, Jacksonville, Florida, *Chairman.* Discussion.
Report of Committee on Constitutions. SAMUEL A. GREELEY, S. B., Consulting Engineer, Chicago, *Chairman.* Discussion.
Water Supply and Typhoid Fever. (Title Tentative.) COL. GEORGE A. JOHNSON, Construction Division of the Army, Washington, D. C.
Operating Features of St. Louis Waterworks. (Title Tentative.) E. E. WALL, Water Commissioner, St. Louis, Mo.
Control of Water Purification Plants in Ohio. W. H. DITTOE, B. S., Chief Engineer, State Department of Health, Columbus, Ohio.
Typhoid Fever Outbreak in Charleston, W. Va. (Title Tentative.) EDWARD MAYO TOLMAN, Director and Chief Engineer, Department of Health, Charleston, W. Va.
The Engineer in Public Health Work. (Title Tentative.) MORRIS KNOWLES and MAURICE SCHARFF, Engineers, Pittsburgh, Pa.
Treatment of Wastes from Sugar Refinery. LANGDON PEARSE, M. S., and S. A. GREELEY, S. B., Consulting Engineers, Chicago.
Sanitary Engineering Practices in Europe. (Title Tentative.) THORNDIKE SAVILLE, Professor, University of North Carolina, Raleigh, North Carolina.

Paper. (Title not yet submitted.) FREDERIC BASS, Professor of Civil Engineering, University of Minnesota, Minneapolis, Minnesota.

Paper. (Title not yet submitted.) CHARLES SAVILLE, Sec'y, Chamber of Commerce and Manufacturers Association, Dallas, Texas.

(TENTATIVE.)

PROGRAM OF THE SECTION ON VITAL STATISTICS.

Chairman, WM. H. GUILFOY, M. D., *New York City.*
Vice-Chairman, R. H. COATS, *Ottawa, Ont.*
Secretary, RICHARD C. LAPPIN, *Washington, D. C.*

Correspondence concerning this Section is to be addressed to the program chairman, Mr. Lappin, Bureau of the Census, Washington, D. C.

Traffic Regulation as a Means of Preventing Injury and Death from Street Vehicles. S. J. BYRNE, M. D., *Assistant Registrar of Records, Department of Health, Brooklyn, N. Y.*

Election of Nominating Committee.

Results Appearing in the Forthcoming Second Bulletin of United States Life Tables. JAMES W. GLOVER, PH. D., *Professor of Mathematics and Insurance, University of Michigan, and Expert Special Agent, Bureau of the Census, in charge of the preparation of the United States Life Tables, Ann Arbor, Mich.*

Report of the Committee on Institutional and Hospital Statistics. FREDERICK L. HOFFMAN, LL. D., *Third Vice-President and Statistician, Prudential Insurance Company of America, Newark, N. J., Chairman.*

Report of the Committee on Morbidity Reports and Statistics. JOHN T. BLACK, M. D., *State Commissioner of Health, Hartford, Conn., Chairman.*

Report of the Committee on Membership. WM. F. PETRIE, *Chief, Division of Vital Statistics, Department of State, Lansing, Mich., Chairman.*

Report of the Committee on Registration Affairs. WILLIAM H. DAVIS, M. D., *Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C., Chairman.*

Report of the Committee on the Accuracy of Certified Causes of Death and Its Relation to Mortality Statistics and the International List. HAVEN EMERSON, M. D., *New York City, Chairman.*

Report of Nominating Committee and Election of Officers and Section Council.

Vital Statistics in Canada. HON. R. H. COATS, *Dominion Statistician, Ottawa, Ont.*

Malaria Control in Georgia. T. F. ABERCROMBIE, M. D., *Secretary, State Board of Health, Atlanta, Ga.*

Malaria in California. FREDERICK L. HOFFMAN, LL. D., *Third Vice-President and Statistician, Prudential Insurance Company of America, Newark, N. J.*

Pellagra in Mississippi. R. W. HALL, M. D., *Director, Bureau of Vital Statistics, State Board of Health, Jackson, Miss.*

The Economics of Health Protection. HENRY B. HEMENWAY, M. D., *District Health Officer, Division of Vital Statistics, State Department of Public Health, Springfield, Ill.*

Report of the Committee on Legislation. W. A. PLECKER, M. D., *State Registrar of Vital Statistics, Richmond, Va., Chairman.*

Report of the Committee on Amendments to the Standard Certificate of Birth. WILLIAM H. DAVIS, M. D., *Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C., Chairman.*

Report of the Committee on Morbidity Records and Mortality Statistics in Industry. LOUIS I. DUBLIN, PH. D., *Statistician, Metropolitan Life Insurance Company, New York City, Chairman.*

Statistics of the Influenza Epidemic.

Influenza, United States Army, 1918: Some Observations, Statistical and Otherwise. COL. D. C. HOWARD and LIEUT.-COL. A. G. LOVE, *Medical Corps, Washington, D. C.*

Influenza Morbidity Statistics: General Results of Surveys by the United States Public Health Service. W. H. FROST, *Surgeon, United States Public Health Service, Washington, D. C.*

Influenza Epidemic in the Registration Area for Deaths. WILLIAM H. DAVIS, M. D., *Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C.*

Statistics of the Metropolitan Life Insurance Company Covering the Influenza Epidemic. LEE K. FRANKEL, PH. D., *Third Vice-President*, and LOUIS I. DUBLIN, PH. D., *Statistician, Metropolitan Life Insurance Co., New York City.*

Report of the Committee on Influenza Statistics. EDWIN W. KOPF, *Assistant Statistician, Metropolitan Life Insurance Company, New York City, Chairman.*

Vital Statistics of the Influenza Epidemic in Connecticut. PROF. C.-E. A. WINSLOW and J. F. ROGERS, *Yale University, New Haven, Conn.*

The Preliminary Report on Certain Statistics of the Influenza Epidemic of 1918 in New York State. OTTO R. EICHEL, M. D., *Director, Division of Vital Statistics, State Department of Health, Albany, N. Y.*

Variations in Influenza Incidence and Mortality at Different Periods of the Epidemic. EDGAR SYDENSTRICKER, *Statistician, United States Public Health Service, Washington, D. C.*

Report of Section Council and Nomination of Standing Committees for Ensuing Year.

Infant Mortality in the Registration Area for Births. WILLIAM H. DAVIS, M. D., *Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C.*

DISCUSSION: Led by S. J. BYRNE, M. D., and ARTHUR J. O'LEARY, M. D., *Assistant Registrars of Records, Department of Health, New York City.*

Report of the Committee on Nonresident Deaths. W. R. BATT, M. D., *State Registrar of Vital Statistics, Harrisburg, Pa., Chairman.*

Report of the Committee on the 1920 Census and Its Relation to Vital Statistics. JOHN E. MONGER, M. D., *State Registrar of Vital Statistics, Department of State, Columbus, Ohio, Chairman.*

Report of the Committee on Forms and Methods of Statistical Practice. C. ST. CLAIR DRAKE, M. D., *State Director of Public Health, Springfield, Ill., Chairman.*

Report of the Committee on Standard Symbols in Vital Statistics Analytics. EDWIN W. KOPF, *Assistant Statistician, Metropolitan Life Insurance Company, New York City, Chairman.*

Report of the Committee on Resolutions. HON. J. W. ARMSTRONG, *Municipal Commissioner of Manitoba, Winnipeg, Manitoba, Chairman.*

Unfinished Business.

(TENTATIVE.)

PROGRAM OF THE SECTION ON FOOD AND DRUGS.

Chairman, MR. HERMANN C. LYTHGOE, *Boston, Mass.*
Vice-Chairman, FRED C. BLANCK, M. D., *Washington, D. C.*
Secretary, PROF. JAMES O. JORDAN, *Boston, Mass.*

Correspondence concerning this Section is to be addressed to the program chairman, Harry W. Redfield, M. D., Bureau of Chemistry, Washington, D. C.

Relation of Plane of Nutrition to Public Health. E. V. MCCOLLUM, M. D., *School of Hygiene and Public Health, Johns Hopkins University.*

Problem of Adequate Milk Supply. HENRY C. SHERMAN, *Professor of Food Chemistry, Columbia University, New York City.*

Future of Food and Drug Control: Needed Developments. CARL L. ALSBERG, PH. D., *Chief, Bureau of Chemistry, Washington, D. C.*

Uses, Possibilities and Limitations of Bacteriology in Food Control. E. O. JORDAN, *Professor of Bacteriology and Hygiene, University of Chicago, Chicago, Ill.*

Organization of Control of Pasteurization. F. O. TONNEY, M. D., *Board of Health, Chicago, Ill.*

DISCUSSION: By E. O. JORDAN, *Chicago.*

What Should Be the Basis of the Control of Dehydrated Foods? PROF. SAMUEL C. PRESCOTT, *Massachusetts Institute of Technology, Boston, Mass.*

DISCUSSION: By E. V. MCCOLLUM, M. D., *Baltimore.*

Effect of Self-Imposed Inspection of the Trade on Quality of Canned Foods. H. M. LOOMIS, *National Canners Association, Washington, D. C.*

Purpose and Function of Commercial Control Laboratories. L. M. TOLMAN, *Chief Chemist, Wilson and Company, Chicago, Ill.*

Army Food Supply, Specifications and Standards, Inspection and Control. E. L. P. TREUTHARDT, *Captain, Subsistence Division, Inspection Branch, Quartermaster Corps, Washington, D. C.*

Federal Meat Inspection. JOHN R. MOHLER, M. D., *Chief, Bureau of Animal Industry, Washington, D. C.*

State and Municipal Meat Inspection. JOHN R. MOHLER, M. D., *Chief, Bureau of Animal Industry, Washington, D. C.*

Results Obtained by Combining a Number of Insanitary Slaughter Houses into One Central Abattoir with City Inspector. HON. ED. H. MCCUISTION, *Mayor, Paris, Tex.*

A Model Law for City Meat Inspection. W. PARKER JONES, *Washington, D. C.*

The Country Slaughter House: How It Should Be Constructed. GEORGE H. PARKS, *Bureau of Animal Industry, Washington, D. C.*

The Proper Handling and Refrigeration of Meat from the Time It Leaves the Packers' Hands until Consumed. LOUIS D. HALL, *Bureau of Markets, Washington, D. C.*

Report of Committee on Meat Inspection. GEORGE H. SHAW, *Bureau of Animal Industry, Washington, D. C.*

Report of Committee on Retail Distribution and Marketing of Foods. MISS MARION TALBOT, *Professor of Household Administration, University of Chicago, Chicago, Ill.*

Report of Committee on Conservation and Development of Food Supplies. CARL L. ALSBERG, PH. D., *Chief Bureau of Chemistry, Washington, D. C.*

Report of Committee on Nutritional Problems. HENRY C. SHERMAN, *Professor of Food Chemistry, Columbia University, New York City.*

Report of Committee on Relation of Food to Disease. MILTON J. ROSENAU, M. D., *Professor of Preventive Medicine and Hygiene, Harvard Medical School, Boston, Mass.*

Report of Committee on Preparation, Packing and Transportation of Food. WILLIAM H. LIPMAN, M. D., *Medical Director, Swift and Company, Chicago, Ill.*

Report of Committee on Cold Storage. PETER H. BRYCE, M. D., *Chief Medical Officer, Canadian Immigration Service, Ottawa, Can.*

Report of Committee on Control of Milk and Dairy Products. HARRY A. HARDING, PH. D., *Professor of Dairy Bacteriology, University of Illinois, Urbana, Ill.*

Report of Committee on Canning. W. D. BIGELOW, M. D., *National Canners Association, Washington, D. C.*

Report of Committee on Municipal Food Administration. OLE SALTHE, *Board of Health, New York City.*

Report of Committee on Drugs and Nostrums. ARTHUR J. CRAMP, M. D., *Director of the Propaganda for Reform Department of the Journal of the American Medical Association, Chicago, Ill.*

Report of Committee on Habit Forming Drugs. CHARLES E. TERRY, M. D., *Editor, The Delineator, New York City.*

(TENTATIVE.)

SPECIAL PROGRAM ON PERSONAL HYGIENE.

Correspondence concerning this program is to be addressed to A. W. Hedrich, Secretary, A. P. H. A., 169 Massachusetts Avenue, Boston.

Physical Education and Health. D. A. SARGENT, M. D., *President, Sargent School of Physical Education, Cambridge, Mass.*

Milk as a Food. E. V. MCCOLLUM, M. D., *Johns Hopkins University, Baltimore, Md.*

Food in Relation to Healthy Living. H. C. SHERMAN, PH. D., *Professor of Food Chemistry, Columbia University, New York City.*

Baths. J. H. KELLOGG, M. D., *Superintendent, Battle Creek Sanitarium, Battle Creek, Mich.*

Anxiety and Fear. THOMAS W. SALMON, M. D., *Medical Director, National Committee for Mental Hygiene, 50 Union Square, New York City.*

(Additional papers to be announced later.)

BOOKS AND REPORTS REVIEWED

The Health Officer. *Frank Overton, A. M., M. D., D. P. H., Sanitary Supervisor, New York State Department of Health, and Willard J. Denno, A. B., M. D., D. P. H., Medical Director of the Standard Oil Co. Philadelphia and London: W. B. Saunders Company. Pp. 512. Price $4.50 net.*

Though primarily intended as a manual of practical directions to health officers the authors have introduced a good deal of general information which the man away from the large centers of population will be glad to have at hand. Such are the chapters on bacteriology and immunity and much of those on epidemiology, food values and ventilation. It thus becomes a sort of abridged text-book on hygiene as well as a handbook of practice. The first six chapters relate to the organization and relation of local, state and Federal health departments and the qualifications and duties of officials. The chief criticism of this, and also of the chapters on procedures and a local code, and indeed of other parts of the book, is that it is based too exclusively on conditions in the state of New York. Though every one realizes the splendid work done in that state, there is much of good elsewhere and the form of government and method of legislation differ so much in other states that some of the statements would not apply. A very suggestive and helpful chapter is one on records and reports. Then come chapters on vital statistics, public health nursing and education. Of course a large portion of the book is occupied with specific directions for the management of the infectious diseases. The work is intended primarily for health officers in the smaller communities and it is probably for this reason that quite a little about treatment and much about diagnosis has been introduced. It is shown that diagnostic skill, tactfully employed in assisting the practicing physician, is a great asset for the health officer. It is a pleasure to see that venereal diseases receive due attention. A chapter on mental defects has been introduced, presumably because, in New York, local health officers have certain duties in the disposition of the insane. The discussion of nuisances, vermin, and the disposal of household wastes is unusually up to date and practical. There is a chapter on camp sanitation, a subject which has received much of attention in New York and should receive more in other states. Of course one finds chapters on milk and other food control, on sanitary engineering, water and sewage. Industrial hygiene is given a few pages. One might wish that the chapter on child hygiene had been considerably expanded, even if space had to be taken from subjects of less importance and general interest. The book is an excellent exposition of the best present day thought.

C. V. Chapin.

American Red Cross Text-Book on Home Hygiene and Care of the Sick. *Edited by Jane A. Delano, R. N. Revised and rewritten by Anne Hervey Strong, R. N.*

This compendium of hygiene and home nursing well deserves the qualifying term, *Multum in parvo*. The object of the book is excellently set forth in the introduction as being "to supply a little knowledge of sickness, which though limited may yet be safe." The great drawback to most home nursing courses is that young ladies taking them thereafter believe themselves to be trained nurses equipped for any exigency. Professor Strong's broad experience as a teacher is sufficient guarantee that no book written by her will convey any such erroneous impression.

The book starts off with a succinct chapter on the causes and prevention of sickness, dealing with parasites, communicable disease, and the defenses of the body against such disease. The non-communicable diseases are also touched upon. Then follows an excellent section on the hygiene of environment and person. Most of the essentials for the baby's health and happiness are to be found in the third chapter. Next, the common indications of sickness are dealt with in simple and clear language, those of mental illness not being neglected. Succeeding chapters take up the equipment and care of the sick room, beds and bedmaking, baths and bathing, feeding the sick, and similar practical subjects. A chapter on common ailments and emergencies is well handled; that on special points in the care of children, convalescents, chronics, and the aged is well worth reading by anyone. An appendix and a glossary complete the book.

Various minor points are open to criticism as in most books. In the light of our experiences of last year influenza can hardly be classed among the diseases caused by micro-organisms that are now well known. Again, the problem of the examination of the food handler, though theoretically simple is practically very hard to solve. Another point noted was the recommendation that except in the case of the aged or sick the room temperature had better be between 60° and 65°; as a matter of fact few Americans are comfortable at such low temperatures in home or schoolroom.

On the whole, however, in summing up this little volume it may be said that it is judiciously written, clear, modest yet ample in scope. The author shows a judiciousness in the use of adjectives and an understanding of the meaning of single words rare in books of this kind. A careful study of this manual by the general public would render the task of the public health official as well as of the practicing physician very much easier.

Merrill E. Champion, M. D.

Rules for Recovery from Tuberculosis. A Layman's Handbook of Treatment. *Lawrason Brown, M. D. Third edition. Philadelphia: Lea & Febiger 1919. Price, $1.50.*

The title of this book is somewhat misleading for it is not an enumeration of a series of rules for the patient to observe, but as Dr. Brown points out in the preface the object of the book is to make clear the whys and wherefores of many rules ordinarily given to patients in an oracular manner. "The day has come when the physician should look upon the patient not as an ignorant child but as a human being endowed with more or less mature intelligence; as one in fact who has a right to demand an explanation of the way certain effects follow certain causes." It is for this very reason that the physician will find this book of as much help as it will be to the patient. He will find therein many practical points on the care of the patient, on the preparation of the room, the sleeping porch, etc., details that have proved satisfactory at the most famous tuberculosis sanatorium in this country.

This work is an important contribution to public health education and it would be well worth while for those engaged in public health work to read it as a model of presentation of a medical subject. The reviewer knows of few attempts in the field of public health education that are comparable to this work in the matter of simplicity and forcefulness of presentation.

The book contains twenty-six chapters, each dealing with some particular topic of interest to tuberculous patients. Some of them are on rest, food, fresh air, sleeping out of doors, exercise, body temperature, body weight, climate, care of the mouth, food values, tuberculin, and how and when we contract tuberculosis. Each chapter is really a compendium of the topic treated and the material included contains everything up to date. The chapters on diet and air are particularly well presented and it is interesting to note that the very last word on nutrition and ventilation is included. This little book is essentially a treatise on personal hygiene, and contains many excellent sermonettes on healthful living. Chapter xii, for example, "On Cultivating an Outdoor Hobby and on Recreation," could well be used as a basis for a lecture on this topic.

It is interesting to note that Dr. Brown believes that the most efficient methods of combating tuberculosis now at our disposal are: The greatest protection of children during the first few years of life and the maintenance, especially from the fifteenth to the thirtieth year, of the individual's resistance to disease.

D. Greenberg.

PUBLIC HEALTH NOTES

Abstracts by D. Greenberg, M. P. Horowitz and Mayo Tolman.

Management of War Hysteria.—In a paper on this subject before the American Medical Association at its recent meeting at Atlantic City, Tom A. Williams, M. D., of Washington finds that nearly 10 per cent of the soldiers incapacitated during an attack are found to have hysteria. A large proportion of them can be restored immediately if skillfully managed, and can be returned to duty without loss of efficiency. The physician must understand thoroughly the psychological mechanism of the patient and must exercise a dynamic volition which will compel him to use the effort demanded. In the more complex cases where hysteria has become fixed individual analysis is necessary, and a longer course of suggestion and persuasion. The inert man must be differently treated from the determined man. The former is easier to cure, but more difficult to keep well. The best method of treatment is to change the patient's mental attitude by reëducative procedure. In order to accomplish this it is essential that the physician be able to enter into the thoughts and feelings of the patient. It is then easy to lead him out of the woods into the light.

✱

Cancer and the Nurse.—As soon as the American Society for the Control of Cancer was organized and entered upon its program of promoting the education of the public regarding the early recognition and treatment of malignant disease, it was realized that the nurse, and particularly the public health nurse, would prove an invaluable ally in this campaign. Accordingly the society has from the beginning endeavored to secure the active coöperation of all nursing organizations, national, state and local, of the leading training schools, and of individual nurses throughout the country. Early in the history of the movement the three great national organizations of nursing adopted resolutions which are printed below and many state and local associations have likewise manifested constant interest and a ready willingness to help in every way possible.

✱

Meeting of Women Physicians.—Women physicians from all over the United States will convene in New York the middle of September to discuss social and medical problems. A six weeks' conference will be conducted by the Social Morality Committee.

✱

Tomato Juice for Infants.—Within the past few years it has been discovered that infants who do not receive breast milk will fail to thrive in a perfectly normal manner, unless there is added to their diet fresh vegetable or fruit juices. There is a vital food element in these juices called "vitamines," abundant in breast milk, but lacking in boiled or pasteurized cows' milk and in all prepared baby foods—which stimulates body growth and prevents the occurrence of scurvy, a distressing and common disease in infancy.

A teaspoonful daily, at the age of a few weeks, an ounce at six months, two ounces at nine months and two to four ounces at the age of one year, will suffice to protect the child.

Now that the season for harvesting tomatoes is at hand, parents' attention is called to the advisability of canning tomatoes for the winter months—if for no other reason than to supply this vital food element to their babies.—Albert Smedes Root, M. D., *Publications N. C. State Board of Health.*

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Undertakers' Health Association.—"Funeral directors and embalmers," the announcement begins, "have come to be recognized as sanitarians, who, while caring for the dead, also protect the health of the living. It is our purpose to focus into a new organization for mutual benefit and increased opportunity, this desire of the profession to be of greater service to the public and to each other." For this purpose the Sanitarian Club of America is to be incorporated. It is to be an organization of mutual benefit, with accident insurance against septic poisoning, a reference library and headquarters in the building in which the official organ is published. There will be a sort of clearing house of information, a rating house of financial responsibility of distant clients and an employment bureau.

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Undernourished School Children.—The New York City Health Department has recently shown that there has been a marked increase in undernourishment among school children during the last three years. In 1914, 5 per cent were undernourished; in 1915, 6 per cent; and in 1918, 19 per cent. The increase is due to insufficient or wrong feeding. At the present time, one child out of every five in New York City is seriously undernourished, and at least two additional ones out of every five, are classed as being between good health and an undernourished condition. It is interesting to note that the average increase in wages since the beginning of the war has been 18 per cent, while the average increase in the cost of food has been nearly

100 per cent.—*Boston Med. and Surg. Jour.*, July 3, 1919. (*M. P. H.*)

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The British Ministry of Health.—The first British Minister of Health to be appointed is the Rt. Hon. Christopher Addison, M. D., M. P.

With the creation of the Ministry of Health the Local Government Board will disappear, its functions and its staff being handed over to the Ministry of Health, although until July 1 there will, as a matter of fact, be both the Ministry of Health and the Local Government Board in existence for a small number of technical purposes. With the Local Government Board there will also disappear the Insurance Commissions, whose powers will be handed over to the Ministry of Health.—*Medical Officer*, June 28, 1919, 220. (*D. G.*)

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Cause of Sporadic Case of Meningitis.—An infant on a farm developed cerebrospinal meningitis. There was no record of any previous cases in this locality, and the case was definitely traced to a soldier who had visited the home and fondled the child, January 28. The soldier said that to his knowledge he had never seen or been in contact with, or known of a case of meningitis in his regiment. He was found to be a meningococcus carrier. Nasal cultures from all other persons who visited the farm were negative. June 10, the organism still persisted, though the man had been under treatment and had used irrigations of all kinds.

As the disposition of carriers is very largely a public health measure, a questionnaire was sent to the various state departments of health in order to ascertain their mode of procedure regarding carriers of meningitis. The answers revealed very little uniformity in the isolation of patients and in dealing with carriers. There were no provisions for the detection of healthy carriers and the compulsory bacteriologic examination of contact. Public health legislation on this subject is imperative if we are going to limit the spread of communicable disease.—Shaw, H. L. K., *Jour. A. M. A.*, July 19, 1919, 219. (*D. G.*)

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Effect of Cement Inhalations upon Healthy and Tuberculous Lungs.—The observation was made that tuberculosis is uncommon among the workers about lime kilns; hence the question arose as to whether or not the lime might have a restraining effect upon any tubercle bacilli that might gain entrance to the lungs. Former efforts to investigate the matter were unsuccessful for want of proper technic and apparatus. The author sought to meet this want in the form of a specially devised dust blower run by a water wheel. Lime dust alone and lime dust mixed with tubercle bacilli were agitated in the air in which guinea-pigs were confined and proper tests made of the lesions produced after varying lengths of exposure.

The results were again negative in that there was no demonstrable beneficial effect produced upon simultaneously or previously produced tuberculosis, although the dust alone had no apparent detrimental effect upon the lung tissues, as ascertained by microscopical examination of test animals and controls. The dust was taken up the lungs and deposited in the interstitial tissues and was from time to time eliminated.—Nagai S., Abstract No. 508 in *China Med. Jour.*, 1919. (*D. G.*)

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Forward Steps in the Tuberculosis Campaign in Massachusetts.—In opening the annual meeting of the Massachusetts Tuberculosis League, Dr. Vincent Y. Bowditch enumerated the following lines along which the anti-tuberculosis campaign is to be waged in his state. He favors the development and extension of the "consultation service," whereby an expert diagnostician in tuberculosis holds clinics in different communities and aids the local physicians in diagnosing doubtful cases. This service really tends to educate the physician in the recognition and diagnosis of the disease. He also favors the development of the "Health in Industry" Department. Trained nurses are sent into mills and factories to supervise the health of the operatives. The work of the "Malnutrition Clinic" is also to be developed further. Weak children at hospital clinics are taken in charge by a physician, properly fed, and trained in the care of their health until they become normal. It is also planned to aid the returned and discharged tuberculous soldiers, and to make special tuberculosis surveys in communities, by which to locate the tuberculous. This work has already begun and is being conducted by field nurses. A more extended effort is to be made to get proper employment for thoroughly arrested cases of tuberculosis and those who are almost recovered, when they are under competent, expert medical and nursing care. Work has been found to be valuable, not only as a therapeutic aid, but as a financial help. Whenever possible tuberculous individuals will be urged to resume their vocational occupations, where the latter are not dangerous to their condition. Lastly, it is urged, that sanatoria be erected for the middle economic group, the large group, that will not ask for charity, yet which cannot afford the high cost of treatment in the expensive, privately owned institutions.—*Boston Surg. and Med. Jour.*, July 17, 1919. (*M. P. H.*)

Epidemic Sore Throat.—An epidemic of streptococcic sore throat prevailing during February, 1919, at the U. S. Naval Hospital, Chelsea, Mass., is described by the author: Attention was first called to it by the numerous instances of postoperative rise in temperature in surgical cases, with sore throat and a subsequent infection of clean surgical wounds with a peculiar hemolytic streptococcus in almost pure culture. The symptoms at the onset of the sore throat were characteristic of acute bacterial anaphylaxis—sudden chilliness, dizziness, fever, headache, backache, general aching and prostration, with occasionally an initial leukopenia. The secondary symptoms localized in the tonsils or lateral pharynx with complications referable to the submaxillary and deep cervical lymph glands, the nasal sinuses, the middle ear and mastoid and the face, and metastasis to the surgical wounds and the joints. In no case was there a complicating bronchitis or broncho-pneumonia, and in this stage there was a constant mild leukocytosis. The microorganism constantly recovered from the throat and infected wounds was a hemolytic streptococcus, growing in large moist droplet-like colonies on blood agar medium. The epidemic originated in the nose and throat surgical wards, and spread by contact to others. There was no possibility of milk infection in this epidemic. Control was effected by suspension of all surgical operations for a period of three weeks, immediate isolation of all acute throat cases, and elimination from the surgical service of all carriers of hemolytic streptococci. The infection was evidently extensively spread outside of the hospital, many new cases having been admitted from outside stations.—Keegan, J. J. *Journal A. M. A.*, May 17, 1919, 1434. (*D. G.*)

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Effect of Wood Dust on Health.—There seems to be a decided difference of opinion as to the effects of wood dust on health. Chronic catarrhal conditions, asthma, etc., which are brought about by the constant breathing of wood dust are often attributed to other causes such as a common cold. However, the marked labor overturn in woodworking industries would indicate that many men are affected to such a degree as to cause them to seek other employment.

A large insurance company found that out of 2,538 deaths from all causes in occupations involving the inhalation of wood fibre dust, 24.7 per cent were due to consumption, the normal percentage for this disease being 14.9. Sir Thomas Oliver gives the number of deaths due to tuberculosis per 1,000 persons as 2.39 for occupations without production of dust and 5.96 for trades giving rise to dust from wood and paper. Wood dust in addition to its importance as a predisposing cause of tuberculosis presents at least six other sources of danger: (1) carrying of infection, (2) the irritation of the respiratory and digestive tracts, (3) the cutting off of light, (4) the danger of fire from the accumulation of wood dust and shavings, (5) the danger of accident from slipping on sawdust or stumbling over accumulations, (6) actual poisoning by certain types of wood which contain active principles known to be poisonous. (*M. T.*)

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Prevention of Pneumonia by Inoculation.—There are now available for study the results of two similar series of prophylactic inoculations against pneumonia made at Camps Upton and Wheeler. At Camp Upton a saline pneumococcus vaccine containing Types I, II and III was used.

Some twelve thousand seasoned troops were inoculated, which number represented approximately 40 per cent of the strength of the entire command. While the period of observation after the inoculation was a brief one (ten weeks), definite evidence of protection was made apparent by the fact that no cases of pneumonia of Types I, II or III occurred in the vaccinated groups, while twenty-six cases due to these types of infection originated in the unvaccinated groups. Only seventeen cases of pneumonia of all types (including Type IV and the streptococcic) developed among the vaccinated as contrasted with 172 cases among the unvaccinated men.

At Camp Wheeler the conditions differed materially from those at Camp Upton in several respects: first, that a large number of the troops were recruits and consequently more susceptible to the disease; second, that the work was complicated by the influenza epidemic, and third, that a lipovaccine was substituted for the saline vaccine previously used.

The study had to be discontinued when demobilization was begun, but it covered a period of approximately three months. During this time 363 cases of pneumonia of all varieties occurred among the vaccinated men (80 per cent of the total command) and 327 cases among the unvaccinated (20 per cent of the command); almost as many, therefore, among the unvaccinated one-fifth as among the vaccinated four-fifths. Excluding cases that developed within one week after the inoculation, namely, before protection of any kind could be expected to have developed, only eight cases of Type I, II and III pneumonia developed among the vaccinated men. These were all secondary to severe cases of influenza.

As a result of this work the conclusion is reached that even in civil life, where pneumonia outranks other infectious diseases in the mortality list, inoculation against pneumonia will find a large field of

usefulness, especially when relatively nontoxic vaccines such as lipovaccines are available.—Editorial. *Jour. A. M. A.* May 24, 1919, 1546. (*D. G.*)

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Venereal Disease in the Second Million.—The U. S. Public Health Service has prepared a table showing the rank of important cities according to the proportion of drafted men with venereal diseases among the second million who went into the army. The figures show the ratio of infections per thousand men received at the training camps. Cities with 500,000 inhabitants or more rank as follows:

St. Louis, Missouri	85.81
Baltimore, Maryland	72.84
Detroit, Michigan	62.27
Chicago, Illinois	57.05
Cleveland, Ohio	44.43
Pittsburgh, Pennsylvania	43.34
Philadelphia, Pennsylvania	37.25
Los Angeles, California	31.72
Boston, Massachusetts	25.73
New York City	24.40

Among the cities having a population of 100,000 to 500,000 it is seen that the southern cities tend to show high ratios. It is to be noted that the second million drafted included a great many negroes which probably helped materially to swell the percentages of the southern cities:

Fort Worth, Texas	186.67
Birmingham, Alabama	185.71
Houston, Texas	171.63
Dallas, Texas	143.03
Columbus, Ohio	142.31
Memphis, Tennessee	132.63
San Antonio, Texas	122.26
Atlanta, Georgia	119.26
Nashville, Tennessee	96.67
New Orleans, Louisiana	92.89
Richmond, Virginia	92.40
Indianapolis, Indiana	91.78
Washington, D. C.	75.33
Buffalo, New York	44.65
Syracuse, New York	43.06
Newark, New Jersey	42.34
Minneapolis, Minnesota	40.87
St. Paul, Minnesota	39.80
Seattle, Washington	38.31
Oakland, California	37.71
Fall River, Massachusetts	24.39
Providence, Rhode Island	24.28
Worcester, Massachusetts	23.04
Patterson, New Jersey	21.28
Cambridge, Massachusetts	20.33

Of the cities between 50,000 and 100,000, Savannah, Ga., heads the list with a rate of 274.5 with Bayonne, N. J., at the bottom with a rate of 8.2. —*Social Hygiene Bulletin*, May, 1919. (*D. G.*)

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Arguments Against Compulsory Health Insurance.—In *Northwest Medicine* for May, 1919, Dr. O. M. Rott presents the arguments against compulsory health insurance. In the first place such a system is paternalistic and dulls the sensibilities' initiative and self reliance of a people. Health insurance in Germany and Austria has not bettered the conditions of the wage earner but has induced a tendency among them to be sick often or to imagine that they are sick. Health insurance is also condemned because it smacks of charity, because it deadens medical research and overworks the physician, because it is opposed by an organized labor represented by the American Federation of Labor, because it lowers the standards of the medical profession and because it will increase poverty by creating a larger dependent class. An employer who has to pay for health insurance will choose his employees carefully, and only after a thorough medical examination. (*M. P. H.*)

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Food Conservation Reflected in Garbage Statistics.—Accurate reports received by the U. S. Food Administration from 96 cities having an aggregate population of more than 26,000,000 show that during 1917 and 1918 ten per cent less garbage was co'lected than in 1916. The statistics regarding the quality of the garbage are even more significant than the figures regarding quantity. Twelve cities that have carefully operated reduction plants and show accurate records were chosen as representative. These cities show a decrease of thirty per cent in grease tonnage recovered for the period 1917–18 as compared with 1916–17. In Columbus, Ohio, and Wilmington, Delaware, the amount of grease recovered was but half that of the pre-war period, showing a great curtailment in the quantity of meats and fats reaching the garbage can.—*Journal of Ind. and Eng. Chemistry*, Nov., 1919. (*M. T.*)

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Build Sanatoria Now for Tuberculosis Following Influenza.—It is reasonably certain that the epidemic of influenza will be responsible for a large increase in the prevalence of tuberculosis and, such being the case, steps should be taken at once to build new sanatoria and enlarge the already existing tuberculosis hospitals.

It is an accepted principle that practically any case of tuberculosis can be cured if treatment is applied soon enough. Many influenza victims who, in the ordinary course of events would have resisted tuberculosis, have had their vitality so lowered as to give way to the inroads of the tubercle bacilli. If means are not at hand for caring for these victims as soon as the disease appears many of them will die. The time to build sanatoria is now.—*Ohio Public Health Journal*, January, 1919.

Ohio estimates her influenza death totals for the months of October, November and December at 22,000. (*M. T.*)

The Preventive Aspect of Mental Deficiency.—In a program for the prevention of mental deficiency the first step to be taken is a well-considered and thoroughly executed maternity and child welfare plan, particularly ante-natal work, because many of the causes of mental deficiency such as syphilis, meningitis, polio-encephalitis, epilepsy, etc., can be recognized in infancy. Since heredity plays such an important part in feeble-mindedness, the control of this factor is a long step towards prevention. Then too, sterilization and segregation are other methods at our disposal. There must be better opportunities for study of mental defectives at our command. Every large city should have a psychiatric clinic properly equipped for the diagnosis and grading of defectives, and particularly for the study of borderland cases. Defectives under supervision should be encouraged to come to such clinics at regular and frequent intervals, much as consumptives now attend tuberculosis dispensaries. In connection with such clinics there should be skilled social workers who can aid the physician in many ways. Another step which might be taken is the compulsory notification by physicians of cases coming under their care.—Young, M., *Medical Officer*, June 7, 1919, 197. (*D. G.*)

Municipal Pasteurization Plant.—In October, 1918, Tarboro, North Carolina, established a milk pasteurization plant at a cost of approximately thirteen hundred dollars, including delivery facilities. This plant has proven a practical means for insuring a pure milk supply and has not only proved self-supporting but has yielded a certain amount of revenue. Milk is purchased at twelve cents a quart and delivered to customers for seventeen cents. The sale of non-pasteurized milk is prevented by the terms of the ordinance establishing the municipal pasteurizing plant. (*M. T.*)

Nativity of Parents as a Factor in Infant Welfare Campaigns.—From an analysis of the infant deaths in New York State for 1916, P. R. Eastman concludes that the infant death rate among children born of native mothers was 87 per 1000 births as compared to a rate of 108.4 for children born of foreign mothers. But the infant death rate for children under 1 month was 47.4 for those born of native mothers as opposed to 45.2 for those born of foreign mothers. About three fourths of the infant deaths under 1 month are due to prenatal causes. It is therefore evident that in planning an infant welfare campaign, the nativity of the mother must be taken into consideration. If the mother is a native born special emphasis should be placed on prenatal education, and the dangers of alcoholism and venereal disease. If the mother is of foreign origin, greater emphasis should be placed on proper feeding, on the proper care of the infant and the improvement of sanitary conditions in the home. Where an unfavorable environment exists, as is usually the case in the homes of mothers of foreign origin, deaths from communicable, respiratory and gastro-intestinal disease are abundant.—Editorial, *Journal* A. M. A., May 24, 1919. (*M. P. H.*)

Proposed Standards for Protecting Maternity.—At the Children's Bureau Conference on Child Welfare Standards held in Washington, May 5–8, the following standards for protecting maternity were adopted tentatively. It is urged that prenatal centers be provided for the care of cases not receiving attention by private physicians. Adequate dental and venereal disease clinics should also be provided. Sufficient maternity hospitals or maternity wards should be furnished. All midwives should be trained, licensed and supervised. Physicians and public health nurses should supervise all household attendants. The public should be educated to the problems of maternal and infant mortality and their solution. Births should be reported within three days. Infant blindness should be prevented by proper treatment at birth. Children's health centers should be established for the education of the mother in the care and feeding of children during the pre-school age. This work should be done by public health nurses. One public health nurse should be appointed for every 2,000 people in the population. Dental clinics, eye, ear, nose and throat clinics, and venereal disease clinics should be established for treating defects and disease in children. Adequate facilities for treating children in hospitals should be provided. All child caring institutions should be licensed and supervised. General educational work in the prevention of communicable diseases should also be conducted.—*The Survey*, May 17, 1919. (*M. P. H.*)

Bacillus Influenzæ in Throats and Saliva.—In an investigation on the bacteriology of influenza the authors cultivated *B. influenzæ* from the mouths of 93 per cent of uncomplicated and complicated cases of influenza. It was also present in the mouths of 43 per cent of normal individuals. The types of pneumococci found associated with the complicating bronchopneumonias of influenza were the types usually found in normal mouths.—I. W. Pritchett and E. G. Stillman, *Jour. of Exp. Med.* XXIX, No. 3, *Jour. A. M. A.*, 72, 895 (1919). (*D. G.*)

German Experience with Typhoid Fever.—In the course of an intensive campaign for the control of typhoid fever which has been indigenous and widely spread in southwestern Germany for several generations the following classical observations have been made. (Extracts from official reports.)

Origin of New Cases of Typhoid Fever.

During the campaign a special effort was made to determine the exact or probable origin of new cases of typhoid fever. In the whole area, during seven years, 10,149 cases were reported and the source of the virus was successfully determined in 5889, or 58.2 per cent of the whole. But there was considerable variation in the percentage of successful determinations at the different institutes, one laboratory succeeding in tracing the origin in 77 per cent of cases, another laboratory in only 30 per cent. This variation is due, partly at least, to differences in the opinion of individual observers as to what constitutes 'proved origin.'

It is worth while quoting the report that in the above 5,889 cases, infection was reported as caused by

1.	Contact (with cases or carriers) in 4,202 cases, or 71 p.c.	
2.	Water	399 cases
3.	Milk	309 cases
4.	Food	141 cases
5.	Dirty linen	39 cases
6.	Nursing	108 cases
7.	Soil	5 cases
8.	Manure and privy vaults	26 cases
9.	Other possibilities	25 cases
10.	Laboratory infections	11 cases
11.	Teachers to pupils	10 cases
12.	Unclassified cases	614 cases

It is evident that this table emphasizes the importance of the rôle of contact in the spread of typhoid fever.—A. E. F. Office of Chief Surgeon, *Weekly Bulletin*, No. 58. (*D. G.*)

Health Education for Men Overseas.—The National War Work Council of the Y. M. C. A. has been entrusted with the education of soldiers of the A. E. F. in Europe. The division of civics of this organization is in charge of Mr. John A. Kingsbury. One bureau in the division of civics is that of health education. The theme health education is to be presented by eight traveling exhibits and a corps of approximately thirty-five lecturers. The chief of the bureau is Lieut.-Col. W. F. Snow, M. C., U. S. A., who is assisted by Dr. W. W. Peter. The lecturers are to be chiefly army medical officers detailed for this purpose from the medical corps of the A. E. F. Work in this country is directed by Prof. Samuel M. Lindsay. The exhibits have been assembled by Dr. W. A. Evans, representing the American Public Health Association.

The exhibit material already shipped consists of 816 wall panels, 1,600 slides, 48 reels, 2,000,000 leaflets and 300,000 booklets and eight stereomotorgraphs. Additional printed matter will be available as it becomes necessary. This exhibit material was gathered by twelve national health societies acting in coöperation, each society being assigned one theme and held responsible for the proper presentation of that theme.—*Social Hygiene Monthly*, March, 1919. (*D. G.*)

Control of Infectious Diseases in Hospitals.—What may be accomplished by a careful control of infectious diseases is brought out in a recent report by Dr. G. H. Weaver, on the work of the Durand Hospital for Infectious Diseases. During five years there were only 23 cases of cross or double infections out of 2,817 patients admitted, or 0.8 per cent of the admissions. In an effort to prevent secondary infections entirely, each patient is isolated in a separate room until the incubation period for extramural infection has passed. Such procedure is necessarily expensive, but the cost is offset by the shorter time of hospital care and by the elimination of severe, and sometimes fatal, results that follow double infections.

After a study of the various methods of ridding diphtheria carriers of their bacilli, it has been found that the removal of the tonsils is practically always followed by prompt disappearance of the bacilli.

In a study of the development of infections among nurses and attendants, it was found that certain infections must be attributed to mouth spray. For this reason, gauze masks have been continuously used since 1916, and it is noted that good results have been achieved in the protection of nurses and attendants by this device.—*Jour. A. M. A.*, Aug. 2, 1919, 359. (*D. G.*)

Graphic Representation of Facts.—Very frequently health officers, engineers, physicians, social workers and almost every type of executive, finds it necessary to represent facts graphically. This ability is now within the easy reach of everybody, inasmuch as the task has been greatly simplified by the manufacture of articles designed especially for this purpose. There are colored glass-head pins, beads and pins, numbered glass pins, glass pins to write on, colored celluloid flags, mechanical bar charts with movable tape, special charting paper, special maps, and other important aids for demonstrating facts graphically. Health officers, and in particular, health educators, should be thoroughly acquainted with all the available facilities that can be placed at their disposal to aid them in making statistics or health principles more clear.—Gardner T. Swarts, Jr., *American City*, July, 1919. (*M. P. H.*)

Course in Housing at Cincinnati.—The University of Cincinnati has planned a comprehensive course in this specialty. It has been arranged by the new department of Industrial Medicine and Public Hygiene at the Medical College in coöperation with the Cincinnati Better Housing League. The course is to include twenty lectures covering every important phase of the subject from the history and growth of the garden city movement to the house from the point of view of the real estate agent. Legislation, industrial housing and coöperative housing will be among the subjects to be treated by speakers competent to discuss their subjects. In addition to the lectures there is reading and assigned field work. The course begins in October, and the lectures will be open not only to the students registered for the course but to the general public.

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Production of Tuberculosis by Sputum Droplets.—Twenty healthy guinea-pigs were kept in an atmosphere saturated with a spray consisting of a solution of tuberculosis sputum in sterile water in the proportion of about 1 to 100, for about five minutes. The pigs were then removed, and the mouth and nose thoroughly exposed and swabbed with alcohol. They were then given a complete bath in a 1 : 5,000 solution of mercuric chlorid. This process was repeated at irregular intervals, usually about seven days, over a period of from six to nine weeks. At the end of this time the pigs were etherized and examined. Rogers found that such an exposure of the nasal passages of guinea-pigs to sprays of finely divided particles of sputum invariably resulted in the development of pulmonary tuberculosis. Other viscera were generally involved, but less uniformly; the mesenteric glands were involved in only 10 per cent of the cases. On the basis of these findings, Rogers believes that the probability of bacilli having entered the esophagus and having been swallowed and absorbed from the intestinal mucosa can practically be discarded. The cervical glands showed tuberculosis changes in 60 per cent of the cases, and the fact cannot be overlooked that the infection might have entered through the nasal mucous membrane.—Rogers, J. B., *Amer. Rev. of Tuberculosis*, June, 1919, 238. (*D. G.*)

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Public Health Nurses' Association Formed in Oklahoma.—As a result of the state conference of public health nurses, called under the auspices of the Oklahoma Tuberculosis Association, in Oklahoma City, on July 11 and 12, the Oklahoma Public Health Nurses' Association was formed. Twenty-two public health nurses from all parts of the state attended the conference. The following topics were discussed: "The State Tuberculosis Association and the Public Health Program in Oklahoma," by Jules Schevitz; and "Important Factors in the Modern Public Health Movement and the Part Played by the Public Health Nurse," by M. P. Horowitz. W. S. Norman spoke on the exhibit, Walter M. Harrison on the newspaper, and the nurses recounted some personal experiences. In the evening of July 11, L. J. Moorwan spoke on the "Essential Factors in the Management of the Tuberculous Patient." On July 12, there was a round-table discussion of "Public Health Nursing in Oklahoma." This was followed by a talk on the "Function of the State Health Department Laboratory in the Protection of the Public Health." (*M. P. H.*)

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Prevention of Droplet Infection by Face Mask.—Experiments made by the author demonstrated that gauze will remove bacteria from the air when carried in a moist spray. The efficiency of the gauze as a filter is in direct ratio to the fineness of the mesh and the number of layers used. As a result of these studies the masks used in the Durand Hospital have been made of three layers of gauze with a mesh of 44 by 40. These masks have been used not only by nurses but by physicians in their work while taking cultures from throats, doing intubations, and examining chests. Masks have also been placed over the faces of mothers while nursing their babies, when either one has been infected by diphtheria or has been a diphtheria carrier. There has been considerable reduction in cases of rhinitis, tonsilitis and pharyngitis among the nurses since masks have been worn.—Weaver, G. H., *Jour. Infect. Dis.*, March, 1919, 218; *Jour. A. M. A.*, 72,962. (*D. G.*)

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The Health of School Children and the War.—In his latest report, Sir George Newman, chief medical officer for the Board of Education of England, referring to the question of the influence of war conditions on the health of school children, indicates that school medical officers throughout the country have been apprehensive that certain social conditions arising from the war would prove deleterious to the health of children. Among such conditions are food rationing, including restriction of fat and sugar, the high price of food, and the lessening of parental control. More or less general inquiries have been made, and it is satisfactory to find that there is little evidence of any ground for the misgivings in regard to food. In London, as the result of a special inquiry into the matter, it was found that the percentage of children in poorly nourished condition in the third term of 1917 was considerably less than half the percentage found in 1913, the year before the war.—*Medical Officer*, April 26, 1919. (*D. G.*)

STATE HEALTH NOTES—LEGISLATION.

California.—The city of Sacramento has taken action against the indiscriminate distribution of remedies within city limits. The ordinance, which is designated as No. 849 reads thus:

WHEREAS, the indiscriminate, free distribution of remedies, nostrums, proprietary medicines, and of matter purporting to be curative agencies, many of which contain poison or other ingredients deleterious to health, and which frequently come into possession of young children and of ignorant persons who do not know how to properly make use of the same, constitutes a menace to life and a danger to health. Therefore

The Board of Trustees of the city of Sacramento ordain as follows:

Section 1. It shall be unlawful for any person to give away or otherwise distribute free of charge, except when placed in the hands of adult persons, within the corporate limits of the city of Sacramento, any sample package, parcel, bottle, box or any other quantity of any remedy, nostrum, proprietary medicine or other materials of alleged medicinal character, or purporting to be a curative agency, or to throw, place, deposit, or leave the same or cause the same to be thrown, placed, deposited or left in any house, hall-way, entrance way, area, yard, or lot, or on any doorstep or porch, or in any street, alley, court, square, or public place except with an adult person in said city of Sacramento.

Sections 2 and 3 provide for punishment, a fine not exceeding $5, or six months' imprisonment, one or both, and declare that the ordinance shall take effect on passage.

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Georgia.—There is a bill before the legislature entitled, "An act to provide a basis of discriminating between the functions of the educational authorities and the health authorities in the public schools of the state; to insure better coöperation of the two forces in instances where their duties coincide or diverge; to define the duties of the school authorities in respect to the school children under their care; to make provision for courses of physical education and training in all public, elementary and secondary schools of the state; to authorize the appointment of a state supervisor of physical education and district, county or local supervisors, and for other purposes."

The preamble calls attention to the fact of the deficiency in physical condition revealed by the draft, which in Georgia showed that approximately one third of the young men were unfit for military duty, and to the further fact that such conditions might have been prevented or remedied by proper care or handling in the schools.

The act provides for a shared responsibility between the public school authorities and the health authorities over the symmetrical health development of the children in the schools. The division of responsibility in general is that indicated by the phrases, "physical education" for the schools and "communicable disease control" for the health authorities. One is a training and the other a restraining function. In addition to these responsibilities, it shall be the duty of the school authorities to be on the alert for obvious defects and diseases, communicable or otherwise, that may be amenable to medical or surgical treatment, and to report all such cases to the parents and to the properly constituted health and medical authorities. In like manner it shall be the duty of the legally constituted health authorities, in addition to the periodical medical inspection of the school premises (already provided for in the Ellis Health Law), to respond to the fullest extent possible to appeals of the school authorities for advice.

Section II defines the term, physical education, to include both physical training proper and physical environment. Physical training is to comprise class instruction in physiology and hygiene, organized and purpose play, drills, calisthenic and athletic exercises, and the inculcation of health habits. Physical environment is to be understood to embrace school grounds and buildings. With reference to the grounds, proper facilities for play are necessary together with a pure water supply, and sanitary sewage system. With reference to buildings, proper seating, heating, lighting, ventilation and esthetic arrangements are required.

Section III, IV, and V, outline the duties of the state commissioner of education, with the advice of expert physical and other educators and the state health commissioner. He shall outline the courses, publish a syllabus for distribution, set forth the qualifications of instructors, and be authorized to administer the programs and activities provided for by the act.

Section VI provides for the appointment of local supervisors of physical education by and with the suggestion and direction of the state commissioner of education.

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Illinois.—The appropriations made by the 51st General Assembly for the uses of the State Department of Public Health for the biennium beginning July 1, 1919, amounted to $786,000. The total appropriation for the department in 1914 was but $50,000.

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North Carolina.—Every teacher in North Carolina schools this year must hold a certificate from a reputable physician stating that he or she has not

an open or active infectious stage of tuberculosis, or any other contagious disease. This is in accordance with an act of the General Assembly of 1919 that was presented by Representative Turner of Mitchell county.

The law provides that the teacher must secure such certificate each year before assuming his or her duties, the examination to be made without charge by the county physician. The law is entitled "an act to prevent public school teachers from infecting their pupils with tuberculosis."

While primarily intended to protect the school children from infection through close association with teachers who might be infected the operation of the law is proving already of great benefit to the teachers themselves. Examinations are now being conducted in a number of counties by physicians preparatory to issuing certificates of health, and these are disclosing conditions that those examined had never suspected.

*

Ohio.—Every hospital and dispensary in Ohio must register immediately with the State Department of Health, to comply with the terms of a law passed by the legislature in March. The act requiring such registration, and also requiring annual reports from all hospitals and dispensaries, went into effect June 25.

The hospital registration and reporting will serve as the basis of a survey of the state's hospital facilities, which was also provided for by the legislature at the present session. A division of hospitals has been created in the State Department of Health, to make this survey.

The resolution authorizing the survey declared that the influenza epidemic had demonstrated the danger of the shortage of hospital accommodations in certain parts of the state and the need for a study to determine where hospital development was most necessary.

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Pennsylvania.—Act No. 191 of the General Assembly, approved by the governor on June 4, provides for the appointment by the governor by and with the consent of the Senate, of a deputy commissioner of health, who shall be a graduate of a legally constituted medical college, and a physician of at least ten years' professional experience. It shall be his duty to perform such duties heretofore conferred by law upon the commissioner of health as the commissioner may specify or direct. He shall perform the duties of commissioner of health whenever that official is absent or incapacitated or whenever a vacancy occurs in that office. The salary is $6,500 per year and expenses actually and necessarily incurred in the performance of his official duties.

Act No. 198, approved June 5, is an amendment of the act of June 18, 1895, being entitled, "An act to provide for the more effectual protection of the public health in the several municipalities of this Commonwealth." Section 12, which is amended, is made more broad and comprehensive. It has reference to the vaccination of school children. It prescribes that it shall be the duty of all school directors, superintendents, principals or other persons in charge of any public, private, parochial, or other school, to refuse the admission of any child to any of said schools, excepting upon a certificate signed by a physician, setting forth that such child has been vaccinated, and that a subsequent examination reveals a resulting cicatrix indicating that vaccination has been properly performed, or that it has previously had smallpox. Certificates of vaccination must accord with the rules and regulations of the commissioner of health.

Section 21, which had already been amended in 1903, is the penalty clause of the act. The change consists practically in removing from the section the limiting phrases that required action to be begun against any violator of the act within sixty days from the commission of the offense, and not later.

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Wisconsin.—*Progressive legislation along the lines of Sanitary Engineering.*—In a bill recently passed by the legislature and signed by the governor, correlating to a certain extent previous enactments, broad powers have been delegated to the State Board of Health in regard to water and ice supply matters, water purification, sewage treatment and disposal, industrial waste treatment and stream pollution matters. The act includes some interesting features, among them being the clause delegating to the state health officer authority and power to act as and for the State Board of Health in enforcing and carrying out the provisions of the act in all matters, except, in the formulation and adoption of rules. The act carries an annual appropriation of $10,000.

Section 2 of the bill is devoted to defining the meaning of certain terms. All bodies of ground or surface water, whether natural or artificial, are included under "waters of the state," while the term "sewage" is to include industrial wastes.

General supervision and control over waters and ice in so far as their sanitary and physical condition affect the public health or comfort are provided for giving the board the power to make and enforce rules and regulations, and to order the necessary changes or additions to correct and prevent pollution. The act makes it mandatory upon the Board to investigate all sources of water or ice

supply and all water and sewerage systems and sewage or refuse disposal plants and to keep complete records of all such investigations. Adequate power is also delegated to compel the operation of such systems and plants in a manner which shall protect health and comfort, or to order their alteration, extension or replacement by suitable structures when deemed necessary. Experiments relating to water purification and treatment of sewage or refuse may be conducted.

There is a provision with reference to the submission of plans, whether of proposed work or of equipment already in existence.

Adequate power to protect public health is afforded by delegating authority to the board to issue orders to secure such operating results, relative to water, sewage and industrial waste systems, as may be prescribed, and if the results directed to be obtained within the time specified be not produced, the board may order such changes in a system as may be deemed necessary to safeguard health and comfort.

Every approval given by the board under the act may be subject to modification and change by the board after due notice. And in all matters, except in formulation and adoption of rules and regulations, the state health officer is empowered to act as and for the board in enforcing and carrying out the provisions of the act.

There is a provision for appeal from a decision of the board, and a time limit of twenty days after judgment is fixed when compliance must be initiated, and penalties are provided.

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Another bill adding three sections to the previously considered act has also been passed by the legislature and recently signed by the governor. This latter act provides that the State Board of Health may require the sewerage system, or sewage or refuse disposal plant of any town, village or city to be so planned and constructed that it may be connected with the sewerage system or sewage or disposal plant of any town, village or city, so that the water supply and health of any community in the same general drainage district may be properly protected, and further provides that after a hearing the board may, upon due notice to all municipalities involved, order the proper connections to be made. Provisions as to rates for service are also included.

In connection with water purification, the State Sanitary Engineering Division anticipated legislation of this character by inaugurating a system of tabulation sheets at every purification plant, these sheets being filed with the division every month. It is the intention further to conduct for each plant at least one efficiency run every year. (*E. J. Tully*) State Sanitary Engineer.

STATE NOTES—GENERAL.

Canada.—Lieut.-Col. John A. Amyot of Toronto, Canada, has been appointed deputy minister of the new department of health recently created in Canada. Doctor Amyot has many warm personal friends in this country as well as in Canada.

In speaking of him Dr. H. W. Hill of Minneapolis, conversant as he is with matters Canadian, thus outlines his merits: "His professional qualifications are of the highest. We take this opportunity of extending to him our best wishes for his success.

"Canada is to be congratulated on its splendid choice of a deputy minister of health and for their achievement in establishing a department of health as a part of their government. We can only hope that before many years the United States will see fit to follow Canada's example and inaugurate a department of health, as the department of agriculture and other departments, to represent the interests of the people in the Cabinet of the United States."

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California.—The Southwestern Tuberculosis Conference will be held at the Hotel Virginia, Long Beach, Cal., October 1-3, 1919, under the auspices of the National Tuberculosis Association.

This conference includes the states of Arizona, California, Colorado, Kansas, New Mexico, Oklahoma and Texas. The purpose of the meeting is to afford the opportunity for an exchange of ideas regarding the various public health and tuberculosis problems encountered in these states and how they can best be met.

This year's officers of the Conference are: President, Dr. Robert A. Peers, Colfax, Cal.; vice-presidents, Arizona, Dr. Jeremiah Metzger, Tuscons California, Dr. C. C. Browning, Los Angeles; Colorado, Dr. Gerald B. Webb, Colorado Springs; Kansas, Dr. S. J. Crumbine, Topeka; New Mexico, Mrs. A. Otero-Warren, Santa Fé; Oklahoma, Mr. E. K. Gaylord, Oklahoma City; Texas, Mr. J. D. Harper, Dallas; secretary, Mrs. E. L. M. Tate-Thompson, Fresno, Cal.; chairman of Committee on Program and Arrangements, John Tombs, Albuquerque, N. M.

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Delaware.—Two health activities of the state of Delaware, together with three other public departments, are in coöperation in a clearing house for publicity and other purposes.

At the close of the recent session of the Delaware legislature, when a new state system of education went in effect, when the State Board of Health was reorganized in its personnel and a special health commissioner employed through the courtesy of a private organization, it was decided that these two public boards and several other state commissions

might very well economize on office force, office space, publicity expenditures, etc., by establishing a central clearing house. There were really two purposes in the final coöperative plan for five state departments. The first is the one just mentioned, the second is an effort to demonstrate the effectiveness and efficiency of a more simplified form of government under which all departments of public welfare would be coördinated. In addition to the publicity, the coöperation of these present commissions through a committee consisting of the chairman of each and the clearing house officials, enables them to prevent duplication and overlapping in their work and also to put before the people of the state a definite program of state development along all these lines.

As the State Program Committee was first formed, it included the State Board of Health, the State Board of Education, the Reconstruction Commission, and the Survey Commission. (The purpose of the latter is to adapt government surveys already made to local conditions.) The State Highway Department is just coming into the State Program.

These five official bodies will keep the public informed of their activities through the clearing house, and the clearing house will conduct both official publicity, and propaganda to promote the desirable legislation at the next session of the legislature, and will endeavor by coöperation with private organizations to coördinate official and volunteer work in such a way that all civic effort in the state may be directed toward one end, the development of Delaware into a model state in governmental efficiency, industrial and agricultural soundness, education, health, transportation and the allied matters such as Americanization, recreation, housing, child protection, etc.

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Florida.—Eight district health officers have been appointed. A hospital for crippled children has been opened. Hon. Joe L. Earman has been appointed president of the State Board of Health and Ralph N. Greene, M. D., state health officer.

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Illinois.—In conjunction with the War Civics Committee, appointed by the War Department, the State Department of Public Health, through its Division of Surveys and Rural Hygiene is conducting a thorough health survey of the city of East St. Louis. The field work is being carried out by Paul L. Skoog, chief of the Division of Surveys, with the coöperation of the Divisions of Child Hygiene and Public Health Nursing, Tuberculosis, Sanitation, Vital Statistics and Communicable Diseases.

A special survey of tuberculosis will be carried out by the Division of Tuberculosis, in conjunction with the National Tuberculosis Association which has made a financial grant for the purpose.

East St. Louis is an industrial city presenting many complex problems due to peculiar sanitary conditions, to large numbers of Negroes and residents of foreign birth, and to the absentee landlord. The city has grown more rapidly than other any city in Illinois, having increased from 58,000 to 92,000 population within the past eight years. On account of the complex conditions existing the War Civics Committee was created and was financed by a fund of $200,000, raised by the residents of the community. This is the sixth extensive municipal health survey carried out by the State Department of Health. On the completion of the survey in East St. Louis, a similar survey will be made in the city of Alton.

Through the enactment of laws and additional appropriations for the State Department of Public Health, made by the last General Assembly, the following additions have been made to the staff of the department: Chief of Division of Biologic and Research Laboratories; assistant bacteriologist in the newly created Division of Biologic and Research Laboratories; assistant epidemiologist for the Division of Communicable Diseases; medical assistant to Child Hygiene and Public Health Nursing; chief of Division of Public Health Inspection; assistant engineer of Division of Sanitation; supervising nurse for Division of Tuberculosis. In the newly created Division of Social Hygiene the following: supervisor of clinics and hospitals; supervisor of education of men; supervisor of education of women; supervisor of social service and supervisor of industrial work.

All divisions and particularly the Division of Vital Statistics have been granted material increase in clerical and operative forces.

The State Department of Public Health has recently opened a venereal disease clinic in connection with the venereal disease ward in the Decatur and Macon County hospitals. Dr. R. L. Morris has been named director of this clinic and Dr. I. H. Neece, city health officer, has been appointed assistant director.

The State Department of Public Health has recently established a motion picture service through which medical societies are supplied with motion picture machines and operators, either for their own meetings or for meetings held under their auspices.

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Louisiana.—Dr. F. E. Harrington, United States Public Health Service, who has been assigned to rural sanitation work in Texas and Louisiana, has just completed a successful campaign in Slidell, La.

Dr. William Edler, scientific assistant, United States Public Health Service, is in charge of the Bureau of Venereal Diseases of the Louisiana State Board of Health.

Baton Rouge is making an effort to eradicate the mosquito. Sanitary Engineer J. A. Leprince, U. S. P. H. S., and Assistant Sanitary Engineer H. C. Woodfall (Reserve) have been assigned to assist Dr. P. H. Jones, city health officer, in the campaign.

In New Orleans, the Fourteenth Ward, under the direction of Mr. W. S. Penick, in coöperation with Dr. W. H. Robin, superintendent of public health, has undertaken a mosquito eradication movement.

It is hoped that these intensive efforts may extend to other sections of the state.

Dr. Maud Loeber, A. B., M. A., of New Orleans, has been associated with the Bureau of Child Hygiene of the State Board of Health. Dr. Loeber is instructor in pediatrics of Tulane University and in charge of clinics for children in Touro Infirmary and Charity Hospital.

The Louisiana State Board of Health has now five laboratories, three of them outside of the city of New Orleans. There are clinics for the treatment of venereal disease.

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Minnesota.—The total number of treatments administered in the venereal disease clinics, under the control of the State Board of Health, during the month of June, was 1,235. These treatments were given to a total of 526 patients.

The summary of the case reporting to the Division of Venereal Diseases for the eleven months elapsing from the time when these reports were made compulsory, August 1, 1918, to the close of the fiscal year, July 1, 1919, was 6,770.

The Division of Venereal Diseases, which was formerly located at the capitol in St. Paul, is now housed on the University Campus in Minneapolis in the Pathology Building, along with the Division of Preventable Diseases and the Division of Sanitation. The Division of Records, the Division of Nursing, and the Division of Vital Statistics, together with the executive office, will remain in the capitol, St. Paul. The distance between these two offices of the same department is about eight miles.

The Minnesota State Board of Health has established its own Wassermann laboratory. The technician in charge is Mr. Ralph M. Sperry, formerly of Philadelphia. This particular form of laboratory service has been available to the physicians of Minnesota through the State Board of Health for the past year and a half, but thus far has been done under contract in a local commercial clinical laboratory.

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Massachusetts.—The State Department of Health is to celebrate on September 15 the fiftieth anniversary of its foundation. For one of the features a public meeting is proposed and it is expected that Sir Arthur Newsholme will speak on the public health work in England during the corresponding period.

J. A. Keenan, M. D., has been appointed acting assistant district health officer and will be stationed in Berkshire County.

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Montana.—The annual conference of health officials was held at Missoula July 7 and 8, with a registration of 116. In addition to the papers by local talent, addresses were presented by visiting public health authorities, Dr. W. A. Evans of Chicago; Dr. J. S. Crumbine, secretary of the Kansas State Board of Health; Capt. Millard Knowlton of the U. S. P. H. S.; and J. S. Abbott of the U. S. Bureau of Chemistry.

An important result of the conference was the formation of the Montana Public Health Association, uniting all the health organizations of the state. The plan of the combination is for each association to constitute a separate section of the new association with its own program, but there will be two general sessions at the same time and place. It is in effect a federation of the state health associations.

The following is the list of officers of the Montana Public Health Association: President, Prof. W. M. Cobleigh, Bozeman; vice-president, Dr. H. T. Rhodes, Choteau; secretary, Dr. W. F. Coggswell, Helena; and treasurer, Dr. W. A. Russell, Hardin. The vice-presidents of the sections are the following: Public Health Administration, Dr. L. W. Allard, Billings; Tuberculosis, Dr. Caroline McGill, Butte; Sanitation and Water Works, Harry Gerharz, Helena; Child Welfare, Mrs. H. B. Farnsworth, Missoula; Industrial Hygiene, Dr. P. H. McCarthy, Butte; Personal Hygiene, Dr. E. G. Steele, Plentywood.

The annual meeting of 1920 will be held at Helena.

The 1919 meeting of the Montana State Medical Society was held in Missoula immediately following that of the health officers. Public health was a feature of many of the papers of the regular medical program.

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New Jersey.—An indictment the last of July charging Mr. and Mrs. Andrew Walker with manslaughter in connection with the death of their eight-year-old daughter from diphtheria in Newark, N. J., will open an important legal case. The Walkers are Christian Scientists, as was also their daughter and during her ten-day sickness she was given no medical treatment. The court in his charge to the grand jury last May declared that "Religions of any character, if they conflict with

the plain obligation of the law, constitute no legal defense."

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New York.—Exceptionally complete reports have been received at the State Department of Health this year covering annual inspections by local authorities to determine violations of rules and regulations for the protection of public water supplies. To date all but two of the eighty municipalities where such rules are in force have filed reports and the further action necessary to abate the violations has been taken by the Engineering Division.

Three cases of human anthrax, two of which proved fatal, have occurred in the vicinity of Randolph (Cattaraugus County) within the last few weeks. The health officer, Dr. C. N. Snover, has published a statement warning owners of livestock of the presence of the disease and instructing them how to protect themselves from infection and how to dispose properly of the carcasses of infected animals.

At a reunion of the health officers who have taken the course for health officers at Syracuse University under the direction of Sanitary Supervisor Frederick W. Sears, M. D., it was voted to organize under the name of the Central New York Public Health Association. Sixty-two graduates who were present became charter members of the new organization.

The work of investigating the equipment, operation and sanitary condition of milk pasteurizing plants which is being carried on by the Engineering Division has been extended to cover all such plants throughout the state, irrespective of whether or not these plants ship their output in whole or in part to New York City. Heretofore the investigation has not included plants shipping to New York City on the ground that the city department of health maintains inspection of such plants, but it is found that the New York City authorities are compelled at times to prohibit shipment to the city from various plants and the product is then sold locally, thus making it necessary that state supervision be maintained in the case of all plants in the state.

Investigations have recently been made, by the engineering division, of sanitary conditions at Land Army Camps located at Selkirk, Peru, Athens, Morton, Fairport, Port Washington, Middletown, Hector, Cold Spring Habor, Bridgehampton, Sodus (2) and Bedford.

Edward Goodwin, M. D., sanitary supervisor, has been carrying on this season a campaign of education among the Jewish farmers and boarding and rooming houses in Ulster and Sullivan counties. The instructions have included methods of improving wells and of building sanitary tops and housings for them, together with surveys for good water supplies. Methods of caring for garbage have been taken up, the sanitary privy has been demonstrated and other matters which have in consideration the health of the summer boarder and of the rural dweller himself. Meetings in the larger centers, like Ellenville, have been arranged. For these literature in English and Yiddish has been prepared in the shape of posters and pamphlets. A part of the good work has been in the line of addresses to school children in the schoolhouses. These have for their text the large subject of cleanliness and some of the details which include the danger of the fly, the need of pure water, and the like. In other places the people of a small community are assembled on the lawn in the open air, with the families of the owners, when possible, and talks on sanitation are given to them.

Doctor Goodwin emphasizes four improvements that it is possible to make in almost any rural community: 1, a sanitary privy; 2, protection of the water supply; 3, care of kitchen wastes; and 4, constant warfare against the fly.

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North Carolina.—In the endeavor to safeguard the health of summer vacationists inspectors of the North Carolina State Board of Health are making official inspections of resort hotels in the western portion of the state. The effort will be made to reach all points in the mountains, and to examine carefully all places catering to summer tourists.

Acting under an act of the General Assembly of 1917, the State Board of Health adopted rules and regulations for the sanitary management of hotels in the state. Provision is made for an inspection at least once a year, the place inspected to be scored in accordance with definite rules.

In connection with the inspection of the regular hotels the railroad eating places that receive the patronage of such a large portion of the traveling public will also be examined.

Greatly increased activity in the installation and extension of sewer systems by the cities and towns of the state is indicated in plans for approval being submitted to the Engineering Department of the State Board of Health.

Two causes are assigned for the unusual amount of work of this character that is now being undertaken in many sections of the state. During the four years of the great war both materials and labor were so scarce that practically all kinds of public improvements were held in abeyance. There is a rush now to catch up with the time that has been lost. Furthermore, the state-wide privy law enacted by the last legislature has caused many municipalities to either begin the installation of sewer systems or to extend those already installed so as to serve larger portions of the population.

Steps for a plan for active coöperation between the North Carolina State Board of Health and the American Red Cross Society in public health work were taken at a recent special meeting of the Board. Looking toward this end the following resolution was unanimously adopted.

"*Resolved*, That the North Carolina State Board of Health officially requests the American Red Cross to send a representative committee, with power to act, to Raleigh at an early date to confer with a committee of the State Board of Health for the purpose of considering and, if possible, adopting a plan of coöperation in public health work for North Carolina between this state and the American Red Cross."

*

North Dakota.—At the state fair at Bismarck, the exhibits tending to the education of the people in matters of health and hygiene have this year been an important feature. There was a day nursery, "where the little bundles of possibilities" were cared for. The fittings were an object lesson and the trained nurses, well-springs of information. This feature was cared for by the University Community House. The Public Health Laboratory exhibited specimens of an educational nature, showing the people what is meant by bacteriological work, and maintained a lecturer and demonstrator during the time of the fair. The Agricultural College presented a health program in country sanitation, personal hygiene, home nursing, good food, together with home conveniences that help make the family life less laborious and irksome. The City Health Department looked after the sanitary condition of the grounds and made daily inspections of the places where food was prepared or served; there was a Red Cross hospital, an exhibit by the North Dakota Anti-Tuberculosis Association, while the showings of the boy and girl scout organizations were features in the presentation of the right idea in living.

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Ohio.—The Hughes Act took effect Sunday, August 10. Many county organization meetings were held immediately thereafter. The State Department of Health was represented at these meetings by members of its staff of district supervisors, who for several weeks have been conferring with local officials in various parts of the state regarding the reorganization.

At their preliminary meeting the mayors and chairmen organized themselves into a district advisory council and elected a five-member board of health. The terms of these five members of the original board will vary from one to five years, and each year after the organization one member will be elected for a five-year term, making the board a permanent body, with only one member's term expiring each year. Two of the five members must be physicians, one a farmer and one attorney. A municipality with one fifth or more of the district population is entitled to one member of the board of health.

Ohio threw away $50,000 in July on typhoid fever, perhaps the most readily preventable of all diseases. This estimate by the State Department of Health is based on a probable total of 400 cases of typhoid in July. The case reports sent in by physicians number 250, but these are admittedly incomplete.

"These 400 cases," said the department, "represent a wage loss of probably $75 each, or $30,000, as each patient was ill about four weeks. This loss was borne either by the patient, whose wages stopped during his sickness, or by his employer, who continues to pay out wages for services which he did not receive. The expense for medical and nursing care would average $50 per case, or $20,000 more.

"Practically all this loss could have been prevented if every community in Ohio had paid proper attention to sanitation. The expenditure of much less money than was lost would practically have prevented the loss."

Ohio's health activities for the control of venereal diseases have been placed on a more efficient basis by the removal of the Bureau of Venereal Diseases of the State Department of Health from Cleveland to the department's headquarters in Columbus. The work of the bureau will be more closely coördinated with the other activities of the department than has been possible in the past.

The bureau was established at Cleveland a year and one-half ago, when the call of the War Department for anti-venereal disease work found Ohio without funds for the purpose. Dr. H. N. Cole at that time assumed charge of the bureau, serving without compensation until Federal funds were apportioned to Ohio for carrying out the program. Doctor Cole now retires from active direction of the bureau but continues to serve in a consulting capacity.

At a symposium on "The Negro Health Problem" in Cincinnati on June 27, 1919, William H. Peters, M. D., outlined the situation in his city in such fashion that a digest of his remarks may be of value to other communities having similar problems.

"More than one half of Cincinnati's Negro population," said Dr. Peters, "which is estimated at 29,551, live in three downtown congested wards.

"Those of us who are familiar with conditions under which the Negro lives, knows that he is the victim of causes which have lowered his resistance to disease and decreased his efficiency. Among the most important may be mentioned poverty, igno-

rance, bad housing, poor food, race prejudice, lack of opportunity, and dissipation."

The vital statistics for 1917 and 1918 reflect most of these causes of mortality, and furnish facts that should be a firm foundation on which to establish a definite public health program. It is evident that:

1. Cincinnati's white death rate was 15.5 per 1,000 in 1917, while the colored rate was 29.5, or almost double. In 1918 the white rate was 19.9 and the colored rate 34.5. Mr. James H. Robinson, executive secretary of the Negro Civic Welfare Committee, reports that the Negro death rate for the city has fluctuated between 28 and 34.5 during the past twenty years, and all ratios have been fairly constant.

2. More than three times as many colored people died of tuberculosis per 1,000 population.

3. The colored syphilis rate was more than five times that of the whites.

4. More than three times as many of them per 1,000 population died of pneumonia.

5. Where one white child died before birth, three colored children, in proportion to the population, met the same fate.

6. Of the colored children born alive, almost three times as many of them, per 1,000 births recorded, perish during the first year of life.

7. More than twice as many Negro children under two, in proportion to the population, die of gastro-enteritis.

8. The excess in the colored deaths of preventable causes is responsible for more than one point in the general death rate of the city.

Accepting the estimate of the Committee of One Hundred on Conservation as correct, Cincinnati's economic loss from preventable diseases among colored people is approximately $2,000,000 per annum.

"While these figures are appalling," continued Doctor Peters, "they need not deter us. On the contrary, they should give us new impetus. Cincinnati is on the threshold of a new era and, with the development of a big city program, will come bigger opportunity for the Negroes, opportunity for better jobs, better living conditions, and better health. Never in our history have we been in a better position to help the colored man. With the medical department of the Cincinnati University, the Cincinnati General Hospital, the Health Department, and all related health agencies working together it should not take us long to mobilize our forces for a strong offensive."

Doctor Peters suggests that a community health center in the midst of this population is needed. It should have a dispensary, and clinics in tuberculosis, obstetrics, medical and surgical facilities, dental clinic, division of child hygiene, bureau of venereal diseases, narcotic relief station, bureau of community nursing and social service department.

Certain elements towards such a center are already assured, while the Health Department can care for others. In fact tentative plans were shown by the speaker, and a portion of the address was directed towards interesting the generous public in the matter.

"Let us not forget that the Negro is an American citizen," said Doctor Peters in conclusion, "his demands for citizenship are the same as ours. The Negro cannot measure up to expectancy if he is not in good health. He needs our sympathy, encouragement and coöperation and, because of the pathological conditions of his group, special treatment. And those of us who are not inclined to be so generous should remember that he is living with us, that the band of contact is close, that he transmits his diseases to us, and that every dollar spent for his welfare is a dollar spent for the health and protection of the white man.

"The Negro health problem is one of the big, pressing problems of the day. It is not purely local. The local situation, however, is acute on account of abnormal migration during the war. we can't ignore the call."

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Pennsylvania.—A very interesting meeting, scheduled for Pittsburgh for September 30 to October 1, is the National First Aid and Mine Rescue Meet, to be held in connection with the dedication of the buildings of the Pittsburgh Experiment Station of the United States Bureau of Mines. These contests have national interest in view of the movement towards greater safety and efficiency in mining industries. The meet is to consist of competitive tests of teams of five men from different mining companies in fifteen or twenty states, in first aid to the injured and in the use of self-contained oxygen apparatus. Already between seventy and eighty team entries have been made for these contests.

✠

South Dakota.—At the July meeting of the State Board of Health and Medical Examiners a division of Medical Licensure was established with Dr. H. R. Kenaston of Bonesteel, for director.

The Division of Venereal Disease Control has recently established venereal disease clinics as follows: At Deadwood, Dr. A. S. Jackson, director, and Dr. V. R. Hodges, assistant, and at Webster, Dr. P. D. Peabody, director, M. H. Ebert, assistant.

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Utah.—Dr. E. G. Gowans has been appointed state director of health education, under the authority of a bill passed by the last legislature. The

salary of the position is $4,000 a year. Doctor Gowans has been state superintendent of public instruction.

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Wisconsin.—The State Board of Health has adopted a full set of rules, having the force of law, for the control of venereal diseases.

Wisconsin's excess of births over deaths in 1917 was 103 per cent, while the average for the birth registration area was 74.4, according to a census report recently announced. Deaths of infants under one year per 1,000 living births were 77.8 in Wisconsin as against 93.8 for the whole area. Wisconsin was one of four states to attain more than 100 per cent in the excess of births over deaths.

Milwaukee in mid-July reported six cases of infantile paralysis and one death, and the Health Department tightened the precautions to prevent an epidemic.

E. J. Tully, chemist and field sanitary engineer for the Wisconsin State Board of Health, has been transferred to the new Bureau of Sanitary Engineering under the board, which was created to deal with problems of sewage disposal and pure water and ice supplies. A chief engineer will be appointed.

Dr. C. A. Harper, state health officer, was named by the Wisconsin State Board of Health to represent that body on the Committee of Examiners for the certification to county boards of public health nurses, or public health instructors, under the new county nurse law. A. B. Cook will represent the State Department of Public Instruction on the committee, and the Association of Registered Nurses will name the third member.

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CONVENTIONS, CONFERENCES, MEETINGS.

The JOURNAL will be glad to publish the dates of prospective conventions or meetings of associations whose purposes are allied to those of the American Public Health Association.

American Public Health Association, New Orleans, La., October 27–30, 1919.

September —, Iowa Public Health Association.
September —, Syracuse, N. Y., Central New York Public Health Association, Meeting for Organization.
September 8–12, Cincinnati, O., American Dietetic Association.
September 8–12, Cincinnati, O., American Hospital Association.
September 11–13, Seattle, Wash., Health Officers' meeting.
September 15–October 26, New York, N. Y., International Conference of Women Physicians.
September 17–18, Quebec Public Health Association.
September 22–25, Harrisburg, Pa., Pennsylvania State Medical Society.
September 22–27, Chicago, Ill., Fifth National Exposition of Chemical Industries.
September 23–24, Oklahoma City, Second Annual Oklahoma State Public Health Conference.
September 24, Kearney, N. J., New Jersey Health Officers Association.
September 24–26, Indianapolis, Ind., Indiana State Medical Society.
September 29, Cleveland, O., National Safety Council.
Week of September 29, New Orleans, La., Southern Tuberculosis Conference.
September 29–30, Pittsburgh, Pa., National First Aid and Mine Rescue Meet. In connection with the dedication of the buildings of the Pittsburgh Experiment Station of the U. S. Bureau of Mines.
September 30–October 3, Albany, N. Y., New England Waterworks Association.
October —, Des Moines, Iowa, Mississippi Valley Conference on Tuberculosis.
October 1–3, Long Beach, Cal., Southwestern Tuberculosis Conference.
October 1–4, Cleveland, O., National Safety Council.
October 7–9, Springfield, Ill., Illinois Public Health Association.
October 20–24, Riverside, Cal., League of California Municipalities and Health Officers.
October 23–24, Jackson, Miss., State Health Officers' meeting.
October 27–30, New Orleans, American Public Health Association.
October 30, Boston, Massachusetts Association of Boards of Health.
November 5, Minnesota Public Health Association.
November 11–13, Asheville, N. C., Southern Medical Association.
November 11–13, Asheville, N. C., American Child Hygiene Association.
November 12–14, New Orleans, La., American Society for Municipal Improvements.
1920, January, Concord, N. H., Health Officers' meeting.
1920, May —, New Orleans, National Conference of Social Work.
1920, May 12, Washington, D. C., U. S. Pharmaceutical Conventions.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst, R. P. Albaugh and P. M. Holmes.

Health Work in Potteries and Printers.—The Whitley Councils sanctioned an experimental scheme for regular medical observation and research in industry. The first experiments were made in two large printing works. Conditions were materially bettered, and numerous cases of disability were helped. It was discovered that a health committee of each industry is the best means of carrying out this work. It is better for each industry to undertake its own welfare matters than to leave it entirely to any government department. Catarrh, bronchitis, and chronic cough are the most common ailments affecting the workers and it is very rare to find a large office without somebody in it suffering from a cold. It is quite possible that it can be demonstrated by experiment that economy would be effected if workers suffering in the early stages of catarrh were persuaded to stay at home until they recovered. Anæmia is very frequent among young women and handicaps their work greatly. In three large clothing factories 63 per cent of the girls were found suffering from anæmia. Much illness and fatigue is evidently due to short, hurried and scrambled meals.—*The Lancet*, London, July 5, 1919, p. 24.

✠

How to Start an Industrial Medical Service.—An industrial medical service first needs the momentum of popular interest and can only be obtained through direct touch with the personality of those it serves. The next point is consideration of the duties to be undertaken. These concern industrial birth, life, and death. Industrial birth is the engagement of workers; and here medical services are the chief features in the selecting and placing of workers. Industrial life is the period of employment; and here skilled medical services are of even more value and must include industrial hygiene and advice on compensation arrangements. Industrial death is the cessation of employment; and here the medical officer should inquire closely into the causation of dismissal. Such inquiry is for the medical officer what a post-mortem is to the physician. Through medical services the employer will gain in the quality and quantity of output far more than the salary he pays; the worker will benefit by improved health, happiness, and earning capacity. Two things are now needed, an increased supply of trained men and an increased demand for their services. Doctors in industrial areas all suffer from lack of knowledge of how their patients earn their livelihood. Therefore, the schools should start post-graduate courses which they may attend, and the factories should greatly enlarge the duties entrusted to physicians.—*The Lancet*, London, July 5, 1919, p. 30.

✠

Standards for Safe Practices in Handling Acids and Caustics.—Most manufacturing plants handle acids, caustics and alkalis in one form or another. The pamphlet takes up seventeen of the commonest of these and discusses the hazards in handling them in practically every form and relation. Chemical injuries, burns, fumes, internal poisoning, fires, and explosions are all covered, shipping and storage included. Each of the seventeen substances is given a final description regarding its hazardous properties. The pamphlet is well illustrated and is No. 25 of the "Safe Practices" series.—*National Safety Council*, Chicago. Price 25 cents, 15 p.

✠

Automobile Exhaust Gases as Hazards.—The authors prefer the term, "petrol-asphyxia" suggested by *The Travellers' Standard* as a good term to indicate the overpowering of persons by gasoline engine exhaust gas fumes, but it must be noted that gasoline vapors themselves cause intoxication. The intoxication is due to carbon monoxide. Exposure to an atmosphere containing only 0.20 per cent will cause a man at rest to collapse within an hour, and exposure to as little as 0.05 per cent causes headache in several hours' time. Different people are affected differently, and a man at work will be overcome much more rapidly than a man at rest. The symptoms come almost without warning, and collapse in a garage would prove fatal unless outside aid arrived very soon. Resuscitation necessitates the wide opening of doors, removal to fresh air at once, and artificial respiration without delay. Use the prone pressure or Shaefer method. This is described in detail. A tank of oxygen should be used if at hand, but dependence must be placed upon prompt artificial respiration, which should be continued without interruption until natural breathing is restored or at least three hours. Emphasis is placed on not giving any liquid by mouth until the victim is fully conscious. Gasoline vapors to be explosive must contain not less than 1.5 per cent nor more than 5.2 per cent by volume. The range of complete combustion is very narrow, between 1.5 and 2.5 per cent of gasoline vapor in the mixture prior to combustion, so that it is almost impossible to run an engine without producing carbon monoxide at times. In tests made by the authors, garage air was rendered decidedly dangerous after an automo-

hile engine had been run fifteen minutes, and such engines should not be run in a small garage unless doors and windows are wide open.—Burrell and Gauger, *Technical Paper 216, U. S. Bureau of Mines.*

✱

Physical Education and National Growth.—General Wood states that approximately 30 per cent of the men of military age were rejected as unfit. Of the remaining 70 per cent who were sent to the training camps, 8 per cent were rejected as unfit for military service, and this under standards much lower than those in effect in the Regular Army in time of peace. It is safe to say that 50 per cent of our men were unfit for field service in war. This is bad enough from the military standpoint, but it is even more serious from the standpoint of industrial efficiency. In the men from the South came a large proportion with hook-worm and its attendant anæmia and sluggishness of mind and muscle. There was also a large percentage of vice diseases. The state should take a much broader and deeper interest in the welfare of its youth. More thorough instruction is needed in personal hygiene. A powerful agency in correcting existing physical defects will be found in universal training for national service, and our physical training must be broad enough also to reach the girls and young women of the land.—Major General Wood, U. S. A., *Modern Medicine*, June, 1919, p. 97.

✱

Prominence of Industrial Hygiene in the Whole Health Scheme.—Goldwater gives a comprehensive syllabus of activities for the protection and promotion of the nation's health. The whole idea is presented in a detailed table which, for working purposes, he states has been found convenient and useful. The good work done by specialistic societies in the public health field must be made manifest to the man in the street and such function might be assigned to a federal health department with broader powers than those of the present Public Health Service. The American Public Health Association is a common meeting ground to the multitude of private agencies. In the past this Association has undertaken and successfully completed many valuable studies. A plea is made that the Association now embark upon the larger task of producing a series of volumes, a condensed encyclopædic presentation of sanitation and hygiene. In Dr. Goldwater's syllabus one is impressed with the relative amount of space given to industrial hygiene and closely associated headings such as air, lighting, etc.—S. S. Goldwater, M. D., *Modern Medicine*, June, 1919, pp. 109–116.

✱

Health Service, Hammermill Paper Company.—A centralized department known as the employment and service department has to do with all questions of industrial relations. Health service is the most important phase of all. The health of the worker and his family reflects directly upon production, quality of work, and earnings. The services include medical examination, first-aid, safety, sanitation, home visiting of absentees, compensation, and education. The word "service" is used instead of the word "welfare." "When a man is in good health he is brim full of energy and radiates good cheer, which is infectious to other workers about him. The reaction is just the opposite if he is ill." The success of home visiting lies solely in the hands of the one selected to do it. The wrong person may do great harm. A graduate nurse alone is not sufficient. This qualification is essential but other things are: broad human sympathy, the ability to meet people frankly and fairly and to make them feel they are giving as much as they receive, and the ability to carry our message to them as well as to bring back to us their point of view. Sample record forms are given for absences. "It is about as difficult to trace the direct, tangible results in this kind of work as it is from advertising." It produces big results in loyalty, esprit de corps, better understanding and contentment as evidenced by freedom from labor troubles, decreased turnover, less laying off, increased production, and a more wholesome atmosphere throughout the whole plant. —M. Harrison (Erie, Pennsylvania), *Modern Medicine*, June, 1919, pp. 121–126.

✱

Courses in Industrial Hygiene.—New bulletins have been issued covering special course in industrial hygiene by the School of Public Health, Harvard University with the Massachusetts Institute of Technology, and by the College of Medicine, University of Cincinnati.

✱

Occupational Diseases in Plant Physician's Work.—Among the twenty technical cases described as within the wide range of work of the plant physician, Strickland mentions seven, and possibly five more, which are occupational diseases, some of which are specifically occupational, and the balance partly so. These include nickel poisoning, ear wax plugs from oil and grinding materials, paronychia from oil and polishing substances, constipation in persons required to sit for long periods, eczema of the hands and forearms, epitaxis, headache and feeling nervous because "the work troubles her," severe pain in right arm and forearm possibly due to strain, infected scab of an old injury, ganglion or weeping sinew, and emery on the cornea. Most of the others would bear scrutiny from the work relations aspect. —S. P. Strickland (Waltham Watch Company). *Hospital Management*, July, 1919, p. 40.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Anthrax Meningitis.—The anthrax had not been diagnosed during life as the pustule had not had time to develop its characteristic form. It was on the left cheek and the edema around was ascribed to phlebitis of the jugular vein. The patient died the second day with symptoms of fulminating meningitis, and anthrax bacilli were found in the cerebrospinal fluid.—Delater and Calmels, *Bull. Soc. Med. Hop.*, Paris, 43, 332 (1919).

✠

Effect of Typhoid Immunization on Pulmonary Tuberculosis.—Tuberculous foci will react to the toxin of the typhoid bacillus in the same way that they will to tuberculosis. Thus, typhoid immunization should not be conducted without due consideration of the condition of the patient as regards tuberculosis.—Sorgo, *Med. Klin.* No. 8 (1918); *Abstr. Bact.*, 2,362 (1919).

✠

Practical Value of the Complement-Fixation Test for Gonorrhea.—From a study of 500 tests on 403 cases it is concluded that only strongly positive reactions are of real diagnostic value. Patients with old encapsulated foci, which are not infective, and those with infectious urethro-prostatitis will sometimes give weak or negative reactions.—M. Krotoszyner, *Calif. State Jour. Med.*, 16, 90 (1918).

✠

Measles and Pneumonia.—Measles renders its victims extremely susceptible to pneumonia and for this reason measles patients should be carefully protected against exposure to the latter disease. They should be kept in bed during the entire period of sickness and should not be permitted to come in contact with visitors who might be unrecognized carriers of pneumonia infection.

This advice is especially pertinent at the present time when measles appears to be on the increase in many localities.—*Ohio Public Health Journal.*

(*M. T.*)

✠

An Atypical Strain of B. Paratyphosus B.—The organism which has been isolated showed specificity of agglutination, but it produced no acid or gas in dulcite peptone water and was non-motile. After subculturing on Witte's peptone broth agar during five years it has not altered in biological characteristics. The virulence for the mouse when injected subcutaneously corresponded to that of typical strains and gave rise to a generalized septicemia.—W. Broughton-Alcock, *Lancet* (*Engl.*), 196, 1023 (1919).

✠

Physical State of Blood Serum in Relation to Agglutinin and Antibody Content.—By submitting blood serum and other body fluids to a mechanical process, which includes friction combined with pressure, physical changes can be brought about in these fluids which throw some light on the condition in which hæmagglutinins, bacterial agglutinins, complement, complement deviating substances and anti-bodies exist in the blood serum. They suggest that the blood serum and the body fluids, the secretions and excretions, form a graded series with the blood serum at one end, and the excretions, such as the urine, at the other. The hæmagglutinins show marked differences of composition in the different liquors and sediments and they also vary according to the extent to which the fluid has been submitted to the mechanical frictional process. It may be possible to raise the agglutinating capacity of a serum by a mechanical process *in vitro* for therapeutic purposes. From some recent experiments the author is inclined to regard horse serum as markedly toxic to the leucocytes of certain individuals, and this fact may have some reference to the varying liability to serum sickness shown by different individuals.—C. J. Bond, *Brit. Med. Jour.*, No. 3050, p. 729 (1919).

✠

Milk Injections and the Wassermann Reaction.—The serum of a luetic patient which gives a negative Wassermann reaction becomes positive following the injection of milk. In control cases the negative Wassermann is unchanged as a result of the injection.—G. Uddgren, *Berl. Klin. Wochensch.*, No. 15 (1918).

✠

"Mutation" of Bacteria.—By inoculating guinea-pigs with pure strains of diphtheria bacilli it is possible to change the typical characteristic of the organism. This change takes place gradually. The term "mutation" is misleading and should not be employed. True mutation of bacteria has not been observed as yet.—K. E. F. Schmitz, *Centr. Bl. Bakt., Abt. I. (Orig.)*, 77, 369 (1916).

✠

Selective Cholera Media.—Aronson succeeded in growing cholera well on Endo agar to which dextrin and cane sugar had been added. The colonies appeared bright red. The authors obtained still

better results by the addition of 2.5 per cent chlorophyll.—G. Seifert and H. Bamberger, *Muenchen. Med. Wochensch*, 63, 527 (1916).

✱

Some Optical Properties of Bacterial Emulsions.—By observing the transmission of light through a bacterial emulsion some idea of the quantity of the bacterial substance present in the emulsion may be gained.—Fred Viles, *Compt. Rend.*, 168, 575 (1918).

✱

Studies on the Metabolism of Actinomycetes.—Blood agar forms a good medium for the growth of actinomycetes. The production of a dark pigment by some and a clear zone, indicating hemolysis, by others is characteristic. Loeffler's blood serum forms a good medium for the growth of actinomycetes, the liquefaction of the serum by some and the production of a dark brown to black pigment by others are distinctive properties of some of these organisms. The organisms that produce hemolysis and liquefy the blood serum are among the ones that can produce active proteolytic enzymes.—S. A. Waksman, *Jour. Bact.*, 4, 189 (1919).

✱

Studies on Diphtheria Toxin.—*B. diphtheriæ* could not be cultivated in synthetic media composed of amino acids and mineral salts adjusted to the optimum hydrogen ion concentration. Typical luxuriant growth was obtained in a mixture of 99.5 per cent synthetic medium and only 0.5 per cent of bouillon. Production of active toxin, however, required the presence of 10 per cent bouillon. Cystin, when added to plain beef infusion, not only permitted rapid and heavy vegetation, but a strong toxin was also elaborated. Tryptophane, under the same conditions, gave a weaker toxin. The results obtained favor the belief that diphtheria toxin is not a synthetic product, but rather a catabolic substance elaborated by the organism only in presence of certain amino acids and accessory factors, the latter probably of a vitamine character.—L. Davis and N. S. Ferry, *Jour. Bact.*, 4, 217 (1919).

✱

Immunity Reactions in Egyptian Bilharziasis.—A specific antigen can be produced from the cercariæ of the two species, *S. mansoni* and *S. hæmatobium*, which reacts with bilharzia infected sera. This is the first record of a specific substance having been isolated from the body of an invertebrate intermediary infected with a human parasite which will react with human serum. It is claimed that the test is more specific than is the Wassermann reaction for syphilis, inasmuch as the tendency to pseudo-reactions appears to be less marked. The percentage of positive results is particularly marked in the early stages, before the appearance of ova in the urine or excreta.—N. H. Fairley, *Jour. Royal Army Med. Corps*, 32, 243 (1919).

✱

Technic for the Wassermann Reaction.—Description of method employed at the City Hospital Pathological Laboratories, New York City.—J. H. Larkin, L. H. Cornwall and I. J. Levy, *Jour. Lab. Clin. Med.*, 4, 571 (1919).

✱

Cholera Prophylactic Vaccination.—The new cholera vaccine of Kasauli combines the efficiency of Haffkine's vaccine with no local or general reaction. It consists of a pure, sterilized culture of cholera spirillum and can safely be injected even into infants. It is contraindicated when a person suffers from fever or bowel complaints.—A. Roy, *Ind. Med. Gaz.*, 104, 209 (1919).

✱

Study of Dreyer's Agglutination Technic in the Army.—The agglutinating titer of the serum of the healthy individuals inoculated with the triple typhoid vaccine six months or more before rarely runs higher than 1 to 200. A high agglutinating titer for one of the organisms of the typhoid group permits a positive diagnosis. The cases studied suggest strongly that information as to prognosis may be obtained from the agglutination curve. Early blood culture should not be omitted. The Dreyer method should be used when the blood culture is negative, in a clinically suggestive case. The examination of the stoll and urine is important.—A. G. Eggerth, *Jour. Inf. Dis.*, 25, 166 (1919).

✱

New Method for Typing Pneumococci by the Use of Blood.—Ten cc. of blood are drawn with sterile precautions into test tubes containing a few crystals of potassium oxalate (sufficient to prevent clotting). The blood is then shaken with pure fresh ether added in small, successive amounts, until the red cells are completely laked. The laked blood is transferred to a sterile centrifuge tube and centrifuged at high speed for five minutes. The disk of red cell shadows which collects at the surface is removed with a heated platinum loop. With a sterile pipette, 0.3 cc. of the laked blood is placed in each of four sterile stoppered tubes 0.8 by 13 cm. To each of the first three is added 0.5, respectively, of saline emulsion of proved Type I, II, and III, pneumococci grown on glucose serum agar. The fourth tube constitutes the control. Sterile physiologic saline is added to all tubes, sufficient to make up to 1 cc. Sterile pipettes are used throughout. All tubes are stoppered and placed in a water bath at a temperature of 37° C. until the color change appears. The reaction consists in the formation of hemoglobin derivatives, mostly methemoglobin, which impart to the tube an unmistakable brownish-

red color. The final result is a dark brownish-red, gelatinous clot. The reaction, as determined by the naked eye, has been noted as early as after two hours. The average time for appearance of color change is from six to eight hours. Clotted blood should not be used. The ether should be free from alcohol, poured fresh from closed containers. Saline emulsions of actively growing strains of pneumococci, grown on glucose serum agar, should be employed. Strains that have been artificially cultivated for some time and are growing poorly have delayed the reaction, and may even prevent any change. Studies were made on 52 patients. The tests in 49 of the cases could be confirmed by agglutinin reactions made on organisms isolated from sputum, lung puncture, or both.—Leon Loewe, S. Hirshfeld and K. Wallach, *Jour. A. M. A.*, 73, 179 (1919).

✱

Studies on the Gruber-Widal Reaction Following Typhoid Vaccination.—The protective inoculation is followed by a latent period of approximately 3 to 6 days; agglutinins then appear. The maximum agglutination is attained after 2 to 4 weeks, and decreases rapidly from the third month after the inoculation. The reaction is again negative in approximately 30 to 40 per cent of the subjects about 5 to 7 months after the vaccination. Fevers, other than typhoid, have practically no influence on the agglutinin curve when they occur 6 or more months after the last inoculation. Typhoid infection very frequently markedly increases the agglutinins in a vaccinated subject just as in an unvaccinated person. For diagnostic purposes, the Gruber-Widal reaction has no significance during the first 4 months after protective vaccination. A positive reaction of more than 1 to 400 from 5 to 7 months after vaccination signifies typhoid infection in 90 per cent of the cases.—F. Klemperer and F. Rosenthal, *Z. Klin. Med.*, 86, 1 (1918); *Chem. Abst.*, 13, 1600 (1919).

✱

Cerebrospinal Fluid Findings in "Spanish Influenza."—Spinal fluid cultures of so-called Spanish influenza reveals the presence of a characteristic organism in a large ratio of the cases. The organism is a bacillus, Gram. negative, facultative anærobe, nonmotile, acid producing and spore forming. The organism was found in 81.8 per cent of the cases studied. This organism is different from any heretofore isolated from the spinal fluid.—H. R. De Luca, *N. Y. Med. Jour.*, 110, 103 (1919).

✱

Case of Hydrophobia Eighteen Months after Infection.—History of a case which occurred back as far as 1885 in India. The man, a lieutenant in a Bengal cavalry regiment, was bitten by a rabid dog at the end of March, 1884. The period of incubation was one and a half years. A brief description of the case appeared in the annual report of the Army Med. Dept. for 1884.—P. J. Freyer, *Brit. Med. Jour.*, No. 3052, June 28, 1919.

✱

Arsphenamin Apparently Wards off Syphilis.—The author, chief of the French hospital at Manchester, inoculated himself, March 21, 1918, in the presence of twenty physicians, with a little serous fluid from a syphilitic chancre. In less than one hour afterward he was given an intravenous injection of 0.6 gm. of arsphenamin. No local or general symptoms of any kind followed, and the Wassermann test applied every month since has been constantly negative.—A. C. Magian, *Bull. Académie Medicine*, 81, 657 (1919); *Jour. A. M. A.*, 73, 230 (1919).

✱

Etiology of Yellow Fever.—By the inoculation of guinea-pigs intraperitoneally with the emulsions of kidneys from wild rats and mice captured in Guayaquil, it was found that 67 per cent of the wild rats tested harbored in their kidneys a leptospira which produced in guinea-pigs symptoms and lesions identical with those produced by *L. icterohæmorrhagiæ* derived either from patients suffering from infectious jaundice in Japan or Europe, or from wild rats caught in New York. Immune sera were prepared in rabbits by injecting different strains of the Guayaquil leptospira. Marked agglutination took place with the homologous strain. Pfeiffer's phenomenon was positive. The same sera had no effect upon *L. icteroides*. The Guayaquil leptospira differs from *L. icteroides* in its immunity reactions.—H. Noguchi, *Jour. Exp. Med.*, 30, 87 (1919).

✱

Germicidal Power of Antiseptic Oils.—A method which may provisionally be regarded as satisfactory for determining quantitatively the germicidal power of antiseptic oils and substances dissolved in oil has been developed. Phenol dissolved in mineral oil has germicidal value approaching that of its value in water and can serve as an arbitrary standard for comparison when testing the activity of other oils and oil-soluble substances. The method as thus far developed is defective in that any advantage which a substance might possess in the shape of rapidity of action is largely masked by the 24-hour period of exposure used. Consideration given to this factor may lead to a limited degree of improvement in the method described.—Ph. D. McMaster, *Jour. Inf. Dis.*, 24, 378 (1919).